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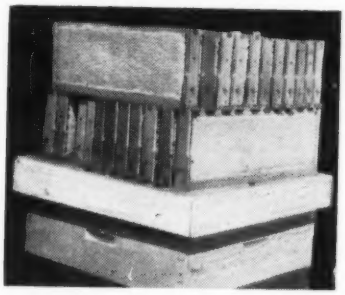

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Gleanings in Bee Culture

June 1959 Vol. 87, No. 6

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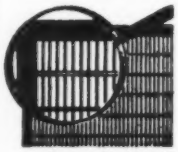

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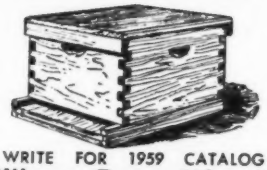

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Monthly HONEY Report

WALTER BARTH
Field Editor
San Antonio, Texas

TIRELESS RUSSIAN propogandists are now turning their efforts toward bolstering the Soviet beekeeping industry. In their ambition to overtake the United States in agricultural production, accent is now being placed on increasing bee production. This is in line with their "Food for Thought" program* in which bee advertisements appear on Russian match boxes bought and used by consumers.

Different advertisements are used. The value of bees as pollinators is one theme. Another proclaims that the buckwheat harvest could be increased 30 to 60 percent through honeybees (apparently the Russians consume lots of buckwheat). A third idea encourages an increase of bees to get more honey (which the Russians love to spread on bread) and wax.

While we are not so fortunate as to have free government matchbook advertising, beekeepers are overlooking a form af local advertising that can be very valuable. The advertising media is your local library. My investigation at San Antonio libraries was quite revealing. I was very surprised at the number of recipe books that are borrowed by housewives at any one time. This prompted me to give several copies of American Honey Institute's "New and Old Honey Recipes" to the public libraries in San Antonio.

The Librarians were very appreciative of the honey recipe books and they felt that there was a strong demand for them. Here in Texas, beekeepers have gone one step further, and through their state association have just issued a fine honey recipe book for local honey promotion.

I urge all Gleanings readers to make it their personal project to supply the nearest local library with a copy or two of the large Institute honey recipes. The few cents invested will pay handsome dividends. Get some personal advertisement for your honey by requesting that your name be listed inside as the donor.

Beekeeping Conditions

Bees appear to be coming through the winter in good shape except for high losses in some of the great Lakes states and Nebraska. Feeding has been necessary in some areas especially since colonies have been building up very fast. The west coast is short on moisture, in fact, southern California has just seen the end of a 60-day drought. As a result southern California honey plants are in poor condition. The sage and buckwheat crops remain in doubt.

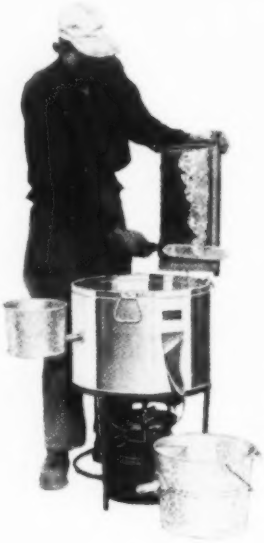
The honey market has apparently stiffened slightly since last month but mostly in bulk. White honey in 60's is moving as high as 14 cents and amber for 12 cents. In view of this it is discouraging to receive reports of good honey going for as little as nine cents. Comb honey is going for about $9.60 per case. Little change has been reported for the standard retail packs.

Beeswax Market

The beeswax market showed a further downward trend. East of the Rockies beeswax is bringing generally 42 cents in cash and 44 cents in trade. West of the Rockies beeswax is bringing 40 cents with the standard two cent per pound premium in trade. Unfortunately, there is still no general extra allowance for color. Hope it develops so that the careful beekeepers can secure the premium they deserve.

Our recent publication of syrup advertising has caused lots of comment from readers. I certainly hope that active honey promotion programs will result. At least, let's start bringing recipe books to local libraries. Every effort counts, and we must start somewhere.

* The New York Times Magazine. March 8, 1958. Section 6, Part 1.



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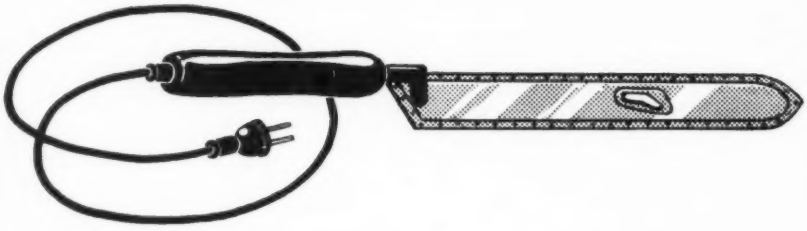

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* Paper No.
Minnesota
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Close-up of queen on brood cells surrounded by some of her attendants. This beekeeper has marked her with white paint for quick identification, and has clipped one wing to prevent her leaving the hive.

The Queen Honeybee*

The ancient world believed the largest bee in the colony was the "king bee". Since then we have learned much about queens, including such things as multiple matings, and queen substance, which is probably the most important factor contributing to the social order of the colony.

DR. M. H. HAYDAK
Dept. of Entomology,
Univ. of Minn.,
St. Paul, Minn.

THROUGH THE CENTURIES man has tried to solve the mysteries of the hive. The cohesion of the colony, the marvelous coordination of the work in the hive has led many observers to compare a colony of bees to human society. Consequently, the interpretations of the life in the colony quite often reflected the social points of view prevailing among the human population at any particular time. Of course, the role which the queen plays in the hive attracted the most attention.

* Paper No. 1001 Miscellaneous Journal Series, Minnesota Agricultural Experiment Station, St. Paul 1, Minnesota.

Throughout the whole ancient world the queen was considered as a leader and king. Such a conception of the "king bee" continued to live through the ages. According to Langstroth, it was an English beekeeper, Butler, who was the first among bee writers to affirm in 1609 that the "king bee" was really a queen, because he had seen her deposit eggs.

Swammerdam was the first to ascertain the sex of the queen by dissection (around 1670). However, Swammerdam himself did not understand the act of fertilization of the queen. According to Park, "Janscha solved the longstanding mystery and in 1771 reported his discovery that the mating of queen and drone occurs away from the hives". In 1789 the French naturalist, Francis Huber, demonstrated by experiments that queens mate outside of the hive in the air. John Hunter, in 1792, presented an article entitled "Observation on Bees", in which he gives a very satisfactory account of how the eggs of the queen are fertilized from the content of the spermatheca.

Finally in 1845 a Polish pastor, John Dzierzon, discovered the fact that drones are produced from unfertilized eggs. It was a revolutionary discovery, and Dzierzon had many opponents. Under the barrage of criticism Dzierzon began to doubt his own theory, but his followers held firmly to it and at present time we accept Dzierzon's theory without question.

What Causes a Queen?

Either workers or queens can be produced from fertilized eggs. The question of how the bees accomplish this puzzled many observers. They noticed that the queen larvae receive much more food than do the worker larvae. It was believed that this greater amount of food given to the queen larvae causes these larvae to develop into queens. Further observations and determinations made by Plants, a German scientist, showed that the food given to older worker larvae has much less proteins and more carbohydrates than that of the younger, hatched to 3 days old larvae. The analyses performed at the University of Minnesota demonstrated that the food of older worker larvae is significantly lower in vitamin content, having 30 per cent less thiamine and riboflavin, 60 per cent less niacin and 90 per cent less pantothenic acid, while the differences in the food given to the younger and older queen larvae is slight.

These findings raise one or two questions. Is the amount of food given to the queen larvae responsible for the development of these larvae into queens? Can the development of workers be attributed to undernutrition of the larvae? On the basis of his experiments, Von Rheim, a German scientist, assumed that a special substance, of a hormone-like character, highly perishable, is added to the food of the queen larvae in the early period of their lives which causes the larva to develop into queens.

Haydak, at the University of Minnesota, was of the opinion that the undernutrition plays an important role in this determination. To resolve this point he decided to starve sealed queen larvae. In this case the larvae would either die or pupate to later emerge as adults. It was assumed that if the determining substance of Von Rhein is added to the food of the young queen larvae, then from the sealed queen larvae only queens would be produced, in spite of starvation. On the other hand if the undernutrition plays a role in the determination of the resulting adults, then worker bees or creatures closely resembling them would be obtained.

Only one adult, resembling a worker was obtained from the just sealed queen larvae which were subjected to starvation. This individual had a typical worker head, mandibles and a straight sting. Seven pupae, dead in the last stages of development, showed heads, mandibles and the sting of the worker shape. Eight sealed queen larvae, which already made cocoons before they were subjected to starvation, developed into normal queens.

On the basis of these results, Haydak concluded that the production of either worker or the queen is due not to a special substance added to the food, but to the amount of the essential nutrients consumed by the queen or worker larvae.

However, later experiments of Von Rhein in Germany and Weaver in this country indicated "that there is a substance or substances in royal jelly that initiate and control differentiation of

queens" and that "at least some essential part of it is highly perishable or not available to larvae after royal jelly has been stored for a time". This, however, does not explain why the sealed queen larvae which obtained this substance in their early life, produced worker-like creatures when deprived of food. More work is needed on this question.

Queen Mating

Upon emergence from the queen cell, a virgin, after staying in the hive for several days, flies out for orientation and mating. Ruttner (1956) gave a very good summary of the events which follow emergence of a virgin and in my discussion I will closely follow his review.

During the first five days the interest of virgin queen is directed toward other queen cells and honey in the cells. She hardly seems to have any relationship with the workers. She runs away from light. After five days a circle of bees is formed around the queen and they become interested in her abdomen. The virgin makes convulsive movements with her abdomen and at the same time the abdominal orifice opens for several seconds. This signifies that the virgin is sexually mature. In the midday hours of the next day the number of excited workers around the queen grows. Some of them run toward the entrance and one can often see a continuous line of bees between the virgin and the entrance. Finally a group of bees fanning with their scent glands exposed gathers in front of the entrance and the normal flying and foraging almost ceases.

The virgin appears at the entrance accompanied by, and often driven there, by several workers. If for some reason the queen is hesitant to fly, workers will prevent the queen's return into the hive and try to force her to fly off. So the mating of the queen is not only the affair between the queen and the drone, but the whole colony participates in the event.

When the queen returns from a mating flight she is continuously followed by the excited workers which touch her and lick her mating sign. The queen makes convulsive contractions of her abdomen which could be observed in the interval of about one minute. After removal of the mating sign the vaginal orifice remains open. The queen may fly out on another mating flight hardly 10 minutes after returning from the last one. It is known that the virgin may mate several times during the same nuptial flight.

After mating the oviducts are filled with sperm. By bending her abdomen the queen causes the valve fold partially to close the vaginal passage. The muscles of the oviducts begin to contract and the sperm is squeezed into the spermatheca, but only a part of it enters the spermatheca, greater part is being pushed out past the fold, into the vagina and out.

Mating flights take place only between 12 noon and 5 p.m., with the greatest frequency between 2 and 4 p.m. The better the weather and the greater the number of drones the better chance for mating. Mating almost always took place at the temperature higher than 20°C. (68°F.). Wind strength of 12-17 m.p.h. greatly reduces the number of matings; at the wind velocity of 17-23 m.p.h. no matings were observed. Queens mated during unfavorable weather receive little sperm and are short lived—superseded.

The queen may commence laying as early as 14 hours after mating. Between the first and the last mating flights there could be 5, 9, 15, or even 24 day intervals. The queen may mate up with 7 to 10 drones and at the distance up to 10 miles from the home apiary.

Another important event in the hive in which the queen participates is swarming. Recent observations showed that the queen is sometimes an "unwilling" participant. Allen (1956) and others noticed that about a week before the colony swarms an abnormal number of bees could be found sitting quietly on the lower combs. The queen is sometimes gently pushed about the hive by the bees, which, from time to time press their heads against her body, lifting up slightly. The queen is fed less frequently. However, she continues to lay, although at a reduced rate.

When the swarm is ready to leave, there is more noise and movement in the hive and many bees are flying around the entrance. The queen by this time is undoubtedly pushed by one or two bees at a time. Some queens appear to be trying to resist, even stag-

gering doing this. When the swarm is leaving, the queen may still be trying to run away from the bees which obviously attempt to force her down. Finally she is chased out and leaves with the swarm.

Signs of an Aging Queen

The majority of beekeepers do not keep their queens in the colonies for over two years. This is justified, unless the queen is exceptionally good. Brunnich in Germany, and Braun in Canada, found that the queens in their second year of life seemed to be at their best so far as the productivity of the colonies which they are heading is concerned.

As in any other individual, there are certain changes associated with the aging of the queen. A virgin has a good cover of hair; her Malpighian tubules are colorless, transparent; the poison sac is filled with poison; oenocytes are colorless with the nuclei clearly visible. As the queen grows older, her hair cover is gradually lost; the Malpighian tubules turn yellow-green, light olive-green, and, finally, olive-green from the granular matter accumulated inside; the oenocytes turn brown, dark greenish-brown and dark brown, their nuclei scarcely visible or not visible at all; the poison sac becomes flat, filled with a reddish-brown, brown or even black matter of a putty-like consistency; the part of the acid poison gland that is closer to the poison sac shows brown or black incrustations. The fact that the content of the poison sac of an old queen is of a putty-like consistency suggests that the old queen is actually defenseless.

From the foregoing it would appear that the workers are actually masters of the hive. They can produce either workers or queens from fertilized eggs; they actively participate in the events of mating, of swarming, often pushing and forcing the queen out of the hive. Actually some observers have been inclined to think that there are so-called "control bees" who govern the life in the colony. The queen, in the minds of beekeepers, became just an egg laying machine who has very little to do with influencing the course of events in the colony.

However, when a colony loses its queen, very shortly afterwards, sometimes in half an hour, the workers become aware of this fact and the well organized behavior of the colony changes; the bees become restless and within a few hours, they begin to modify one or more worker brood cells containing young female larvae so as to change them into queen cells. How do the bees recognize the loss of their queen? Is it the odor which emanates from the queen or is there some other way by which the bees spread the sad news that the queen is not present in the hive?

Queen Substance

In order to find out the answer to this question, Butler of the Rothamsted Experimental Station in England, started a series of very interesting experiments. By caging the queen in single screened or double screened cages; by exposing only certain parts of the body of the queen to workers; by leaving the queen only for a certain period of time in the colony, Butler and his co-workers discovered "that queen honeybees produce a substance (present on all parts of the body surface) which is very attractive to worker bees; that some of the bees obtain this substance by licking her body, and that they, in turn, share it quickly and widely with other members of the colony. Queen substance serves as a most—probably the most—important factor in the maintenance of colony cohesion". Thus it constitutes a chemical coordinator which serves to control the production of further queens and the absence of queen substance results in the removal of factor inhibiting the development of laying workers. When the quantity of queen substance available to workers is reduced below a definite point, the bees start building supersedure queen cells. It seems also probable that some breakdown in the collection and distribution of queen substance among the members of a colony leads to swarming. Although either a virgin or a mated queen is attractive to workers, the worker bees are able to distinguish between the two very quickly. Butler thinks that this is probably due to some difference in the quality of the queen substance produced by virgin and laying queens, due to differences in their diet.

Recent experiments of Butler and Simpson (1958) showed that the mandibular glands of the queen produce the queen substance. If it is the only source, the method of its distribution over the whole body of the queen is yet unknown.

Beekeepers are familiar with cases when a good queen remains in the colony for several years and then sometimes disappears without the bees rearing a new queen. In one of our yards we had a highly productive colony headed by an excellent queen which never was superseded. She stayed in the hive for five years and then disappeared without bees rearing her successor. The colony perished. Sometimes in packages a queen, which has already started laying, is found dead in front of the entrance. On examining the colony only sealed brood and no queen cells are found in the hive. Such occurrences are puzzling and have been very difficult to explain.

What actually happened in such cases may be simply explained: the queen produced enough queen substance up to the end of her life, in spite of the fact that she stopped egg laying. Consequently, the queen rearing instinct of the bees was inhibited. The deficiency of the queen substance may have appeared only when there were no eggs or young larvae, but it was too late.

Thus it appears that the queen is not an egg-laying machine only, as she has been considered lately, but a very important cog in the machinery which holds the colony together, and, indirectly, through the queen substance, influences the most important life activities for the preservation of the continued existence of the colony—supersedure, swarming and emergency queen cell building.

Healing Properties of Beeswax

H. H. ROOT

IN SPITE of low priced substitutes like lanolin, various cosmetics using beeswax as an ingredient, are still classed among the best. Along with honey, beeswax shares a reputation for having a beneficial effect on the skin.

It is reasonable to believe that the delicate flakes of beeswax in comb honey have a soothing, healing effect on the inflamed tissues of the throat and tonsils. Comb honey is loved by children and when granulated it becomes more like a confection. When eaten, beeswax has a slight laxative effect and if it also helps heal inflamed membranes of the throat and the entire digestive tract, so much the better. Gleanings steadfastly maintains that the fatty acids in beeswax are digestable and that beeswax is then a food.

There is a report that a severe case of sinus infection has been reduced after eating comb honey. This is something new to us, but instead of passing it off as an interesting coincidence, we prefer to ask whether others have had similar experiences.

In this connection, J. C. Jarvis, M.D., in his book, FOLK MEDICINE, (Henry Holt & Co., New York) believes that the wax in honeycomb has a definite value in treating certain inflammations or disturbances of the breathing tract. However, he believes that the honey itself should also be a part of the treatment. He mentions a number of instances where comb honey has been instrumental in relieving acute or chronic inflammations of the sinuses! He also mentions that chewing the cappings, wet with honey, is a useful form of treatment although he has more to say of the value of comb honey than he does of the cappings alone.

Dr. Jarvis has long been loyal to honey and now we find that he is interested also in the honeycomb itself. We know he is right about honey; we hope he is right about the value of beeswax.

The Lord could easily have planned to let bees collect mineral wax for building their comb. Instead, He planned to have them secrete the combination of cerotic and palmitic fatty acids which we know as beeswax.

A City Girl Becomes a S

Mrs. Deschamps seals small plastic bags of comb honey as one of her boys voices his approval.

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a Successful Beekeeper

MRS. LUCIE DESCHAMPS
Duvernay, Quebec, Canada

I still remember my visit to the railway station in 1947 when my first package of bees arrived. The railroad agent said, "This is no job for you, it's a man's work to handle those damn things".

I WAS ONCE a little city girl. Born in Montreal, the metropolis of Canada, I spent my childhood playing on sidewalks like other little girls in a big city. As I was the oldest of a poor family of 14 children, it was out of the question for my parents to buy a house to spend week ends in the country.

One day, I graduated from college. I was ready then, to work as an ordinary typist and stenographer in an insurance office. I did not even know a thing about farming and country life.

In school, I can recall learning that bees are insects, making honey; that was all I knew about them. In fact, I had never eaten honey until I started to work with bees 10 years ago.

The day came when I met a wonderful man. He was back from the war in Europe where he had served three years in the Royal Canadian Air Force; he changed my way of living. This man was very fond of bees, for he had been in an agricultural school and had learned the wonderful organization of a beehive. He became my husband. The two nicest wedding presents he gave me, were his name and his fond devotion to bees.

A few months after our honeymoon we bought a country house with two acres of land, located about 20 miles from Montreal. Jerry has his main work there, for being a postal employee, he works from 5 p.m. to 1:30 a.m. It gives him enough time to be home all day to help me work in our apiaries. After we settled down in the country, I had to adapt myself to my new life.

On our first discussion as to how we should plan the future, we concluded that a certain amount of money invested in a bee business would bring us more returns than if invested in any other type of culture such as poultry-raising or gardening.

Being French, I had to learn a minimum of English to be able to understand the vocabulary used in beekeeping literature. I was then ready to follow a correspondence course in beekeeping; I wanted so much to succeed in this new enterprise.

I bought my first two hives in 1947. I still remember my visit to the railway station when my first packages of bees arrived from the south.

"What brings you here?" said the agent. "Where are the bees?" I replied. "Well lady," said he; "this is no job for you, it's a man's work to handle those damn things." Never was he so wrong, because he found out later, that even a woman can handle bees.

For us, years were passing by. I had to study to get experience and try to operate my 35 hives with the minimum cost of labor. After five years we decided the time had come for us to take care of more than one apiary. In the meantime, I had learned how to drive the truck so as to be able to go

Lucie loves bees. Here she is shown with a handful of them.

to my out-apiary to unpack in spring, to look for disease, reinforce the weak colonies, to control swarming, to add supers for the main honey flow, and finally to pack in tar paper for the winter. The home work was reserved for extracting, grading, and selling our crop.

Seven years after I began, with divisions made out of three apiaries, I became the owner of 325 colonies divided in six different apiaries.

In the first years of operation I used to kill all bees before winter, but I soon found it more profitable to winter them. I made many mistakes in the beginning but instead of being discouraged I was trying to reach an important goal, to become a real good beekeeper and like most of us, I made it the hard way.

I Decide to Produce Cut Comb Honey

As I was gaining more experience, I decided to have a try for comb honey. While making comb honey, and through an article read in Gleanings, written by Charles Mraz of Vermont, one of the best American beekeepers, I decided to change our production and to specialize on individual cut comb honey. After my plans were made we paid a visit to Charles Mraz's place. I was very fortunate to receive advice from this gentleman and immediately put his advice into effect. Since that day, all our production is devoted to individual cut comb honey.

Our honey flows being so short here we had to find a way of getting the most possible profit out of each hive, even if it is more work to do so.

My little combs of honey are cut into one inch by two and a half inch pieces. They are slipped by a machine in a little K.S.T. cellophane bag, then sealed with a cellophane sealer and packed in a box holding 24 pieces. The cellophane bags are very easily opened as there are teeth along the opening edges.

We sell them two for 25¢. It was an entirely new product to put on the market around here. I did very well and I am happy to say that I have to supply a chain of 100 stores.

At the present time it is still impossible for me to supply all of them, but I started to place them in 30 stores and the little combs of honey sell like hot cakes.

I also find time to retail all my extracted honey on the public market. The beginning of the week is reserved to prepare for market, pack the honey and grade it, then the end of the week is reserved to sell honey.

During the season, when my crop here is over, I move 100 colonies 400 miles farther north to catch the white dutch clover flow which is just opening up there. It is a lot of work, but worth while as it is very profitable for my cut comb honey.

When the season ends I take all the hives back home and prepare the colonies for winter. Each hive is individually packed in tar paper and shavings. I generally use 25 rolls of tar paper and 425 bags of shavings.

When all the heavy work is over and the exhibitions are well underway, I like very much to present some honey to compete with other beekeepers. In 1958, I sent my honey for the first time to the Royal Winter Fair in Toronto, which is the national agricultural fair in Canada. I received the first award

and was declared Champion of Canada for 1958. I was also the winner of the Beekeepers' Council Trophy awarded for the best honey exhibit at the fair. Incidentally, it was the first time that this trophy was won by the Province of Quebec.

When the season comes to a close, I am proud to take a good rest from bees for the winter months. Then, I enjoy spending nice days at home with my husband and our five wonderful boys. They do need a lot of affection and care as the oldest one is only 10 years old.

I'm not a superwoman, but just an ordinary beekeeper's wife trying to do her best to help her husband. Our main objective in life now is to give the best possible education to our five boys. We feel pretty sure that our bees will be a great help to us in reaching our goal.

BEES AND WAR

E. d. FOX
Washington 22, D. C.

MY FATHER gave me a clipping he cut from our local newspaper with an anecdote describing a mishap with spilled honey and bees.

To quote: "It started in Gravedona, Italy, when a motorcyclist carrying a 40 pound container of honey collided with an automobile. The honey spilled over the main street.

"Gravedona is on the shores of Lake Como in the Italian Alps and it is surrounded by apiaries. Thousands of bees located the honey and came swarming in over it.

"After two hours with most of the honey gone, the bees went back to their hives and Gravedona returned to normal."

This incident recalled to mind some interesting facts I had gathered in the Congressional Library in the District of Columbia relating to the use of bees in warfare and protection.

When a group of soldiers were about to plunder the property of the Roman poet, Virgil, the attempt was successfully thwarted when his servants placed his most valuable possessions in beehives.

For a long time honeybees were known to our Indians by the name of English flies. Indians considered them the harbinger of white man. In proportion as the honeybee advanced the Indian and the buffalo retired.

The ancients used honey as a lethal weapon in warfare. Heptakometes placed poisonous honey along Pompey's route while Pompey with about a thousand men was traveling through the mountains. Pompey's soldiers ate the honey, became senseless and were set upon and killed. Scientists who have since visited this area state the bees fed on nectar produced from the azalea known as Rhododendron Ponticum, the honey of which is poisonous. At the present time it is carefully thrown away and only the beeswax used.

The violators of the Serenecus monastery were punished by a swarm of bees.

In 1840 a farmer in Clark county Missouri cut down several trees filled with honey and started a long dispute between the state of Missouri and Iowa. As the trees grew on the boundary line between the two states, both states claimed the strip of land. In 1851 after 11 years litigation the United States Supreme court finally settled the boundary but by that time in legal circles the case had become known as, "The honey war".

We make better use of our bees than as weapons of war and surely intend and hope to keep them in peace. Perhaps if faced with dire disaster which could be overcome in no other way we just might consider sending our bees out to disperse our enemies. We pray the occasion never arises.

The Case of Utter vs. Utter

Peach tree Utter claimed the bees pierced his fruit to obtain sweet juice. Beekeeper Utter didn't agree.

NORMAN E. GARY
Graduate Ass't. in Apiculture
Comstock Hall, Cornell Univ.
Ithaca, New York

AT THE TURN of the century one of the most celebrated legal battles concerning beekeeping and beekeepers' rights was fought in New York State. It would be difficult to find a more interesting legal case in the history of beekeeping.

The trial proceedings received widespread publicity over the United States, at first mostly unfavorable to the beekeeping industry but in the end serving the industry very well. In fact, this "utter" foolishness, as some punsters made reference to it, accomplished more than just setting a precedent for similar cases. It also settled with certainty the long standing question of the bees' ability to damage fruit by puncturing the skin and withdrawing the juice. Without endangering the plot further, let us delve into the story which has been reconstructed from newspaper clippings and reports in old bee journals.

It seems that the feud had a rather subtle beginning long before it ended in legal scrimmage. There was some difficulty between the Utter brothers in the settling of their mother's estate. In the years following this difficulty the defendant, Mr. Jeffrey W. Utter, was busily engaged in beekeeping while the plaintiff, Mr. William H. Utter, invested his time and efforts in growing peaches.

The first hearing was held in Goshen, New York in Orange County. "Peachtree Utter" claimed that "Beekeeper Utter's" bees stung his trees and ate his fruit! Of course the truth was that the bees were collecting sweet fruit juice exuding from fruit wounds made by other insects and animals. The "stung trees" were suffering from a disease known as the yellows.

The case was tried before a justice of the peace and the decision was against the beekeeper who had to pay $25.00 and costs.

E. R. Root, in one of his editorials in Gleanings gave what is likely the best record of some of the testimony. He wrote, "...I have come in possession of some of the evidence that was presented when the case was tried before the justice. I am infomed that the beekeeper who testified that the bees could bore holes through wood, and work wax as hard as stone, is a man who can neither read nor write; and when he was referred to an article in Gleanings, showing that honeybees can not puncture sound fruit, he is reported to have said, 'Pshaw! I do not care anything for them books. I know more about bees than they do!' ...Another witness for the prosecution testified on direct examination that he saw a bee alight on a peach, and, calling his hired man, they watched the bee, and the result was that the bee punctured the

B & L Library

peach, obtained some juice, and flew away; that the peach showed a small puncture. On a cross-examination the lawyer asked, 'Did you examine the peach **before** the bee alighted on it?' He replied that he did not; that there might have been a hole in it before he saw the bee on it."

The decision against the innocent beekeeper shocked those who knew the truth. Beekeepers realized that such a decision, if uncontested, would present a serious dilemma to the beekeeping profession in fruit growing regions and indeed might seriously threaten the industry where bees were of greatest value for pollination.

Fortunately, the beekeeping industry rallied quickly and strongly. General Manager Secor of the National Beekeepers' Association immediately authorized an appeal to the County Court and pledged one hundred dollars toward fighting the suit in a higher court. Beekeepers responded by sending their dollars in support of "Beekeeper Utter," who now undertook the fight once again, this time in a higher court. His attorneys were reported to be the best lawyers in the county.

E. R. Root published the best account of the second trial in the January issue of Gleanings in 1901. "There were many laughable incidents and some queer statements on the part of the witnesses for the plaintiff as to how the bees did and could puncture fruit; how they used their 'horns' (antennae) to make the holes, etc. In the lower court, several of the witnesses, so I am told, testified that the bees got up 'on their hind legs' and **stung** the fruit; went off and left the peach, and stung others; that a rotten spot at the points pierced by the stings would soon set in, and this would be subsequently visited by the bees. In the higher court, that same set of witnesses testified that the bees punctured the fruit with the 'head end' and not with the 'business' end.

"It was evident that the prosecution had realized the utter absurdity of the former statement. The plaintiff, fruitman Utter, while on the stand went on to describe how the bee moved its head first to one side and then the other, and raised up on its legs and flopped its wings; that after this performance he found there was a hole. This was corroborated with some variation by his two sons. It was amusing to see the plaintiff try to mimic the bee, on the witness stand, as he swayed his head from one side to the other, raised up on his legs, and flopped his arms. His motions were so Utterly ridiculous, and so contrary to the real acts and movements of bees, that every one in the court room, including the jury, laughed, and laughed heartily.

"Another witness, Mrs. W. H. Utter, the wife of the plaintiff, testified that the bees would alight on the fruit, and then with their 'horns' make holes in the peaches. She stated that there were eight holes in one peach she examined, and that three bees were on it; that, after they left, there were three more holes, or 11 in all. Mr. Bacon, one of our attorneys, in his cross-examination got at the facts something in this way:

" 'You say, Mrs. Utter, that there were three holes after three bees had visited that peach? '

'Yes.'

'You say that the bees made these holes with their **horns**? '

'Yes, sir.'

'Where were these horns located? '

'On the top of the head.'

'Two prongs like this? ' said he, putting his two hands over his head.

'Yes.'

'And they took these two horns, and dug them right down into the peach, did they? '

'Yes.'

'Well, now Mrs. Utter, will you tell the jury how three bees, each with two horns, could make only **three** holes? Shouldn't there have been **six** holes? '

'Wh-ah, wy-ad, wy-ah; they took those two horns and put them together, and then poked them into the peach.'

'O- -h! ' said Mr. Bacon, with a wise look. At this time there was an uproar of laughter."

Although the jury was entertained by these humorous events, no one could say what the decision might be. The judge instructed the jury that, in order to render a verdict for the plaintiff, they must find that the bees of the defendant, and **his bees alone,** were the trespassers. It took ten minutes for the jury to return with a "no cause for action," verdict, in favor of beekeeper Utter.

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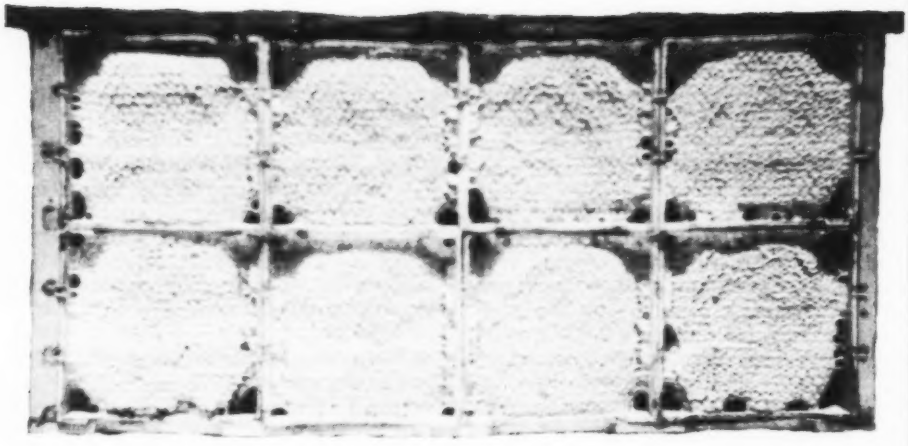
Easier Comb Honey Production



This is the simplest and most practical way to produce comb honey that I know, especially when compared with other methods that require a great deal of time and labor.

MARVIN W. KOSANKE
Ripon, Wisconsin

PROBABLY THE greatest satisfaction that I receive in beekeeping is to produce a high quality of comb honey. Weather, sources of nectar, condition and strength of colonies are always important factors in extracted honey production; however, in comb honey production they are of still greater importance. The beekeeper should have a great amount of knowledge of these important factors and a great deal of skill in applying his particular method of comb honey production.

Regardless of the method a beekeeper may use, the type of equipment used can make comb honey production easier. Very often bees do not enter the supers readily so most beekeepers place a few bait sections in the first super to help alleviate this situation. To supplement this procedure I place a half depth frame with drawn comb on each side of the comb honey super. Not only do the bees enter the super more quickly but I do not have any trouble with unfinished sections on the outside rows. Thus one may remove the supers sooner and avoid travel stain on the sections.

Some years ago sections with four beeways were used. Why they were discarded I do not know. I believe they are a distinct asset in producing comb honey. The four beeway sections allow freedom of movement horizontally as well as vertically. Thus the movement of the bees would be identical as if they were in a full depth hive body. I believe the bees would be more inclined to enter and store honey in a super equipped with the four beeway sections. In addition, they are much easier to clean as the sections come in contact with the separators only at the corners and thus the bees have only a limited space if they are inclined to deposit any propolis on the sections. Last but not least, the four beeway sections allow for better ventilation in the hive, a most important factor in comb honey production.

In order to secure the maximum amount of ventilation I nail small blocks of one-quarter inch in width on the edge of the inner cover. This gives ample space between the inner and outer cover for additional ventilation. Needless to say, I very much believe the bees welcome this added benefaction on the hot summer days when the honey flow is heavy.

Checking for Queeen Cells

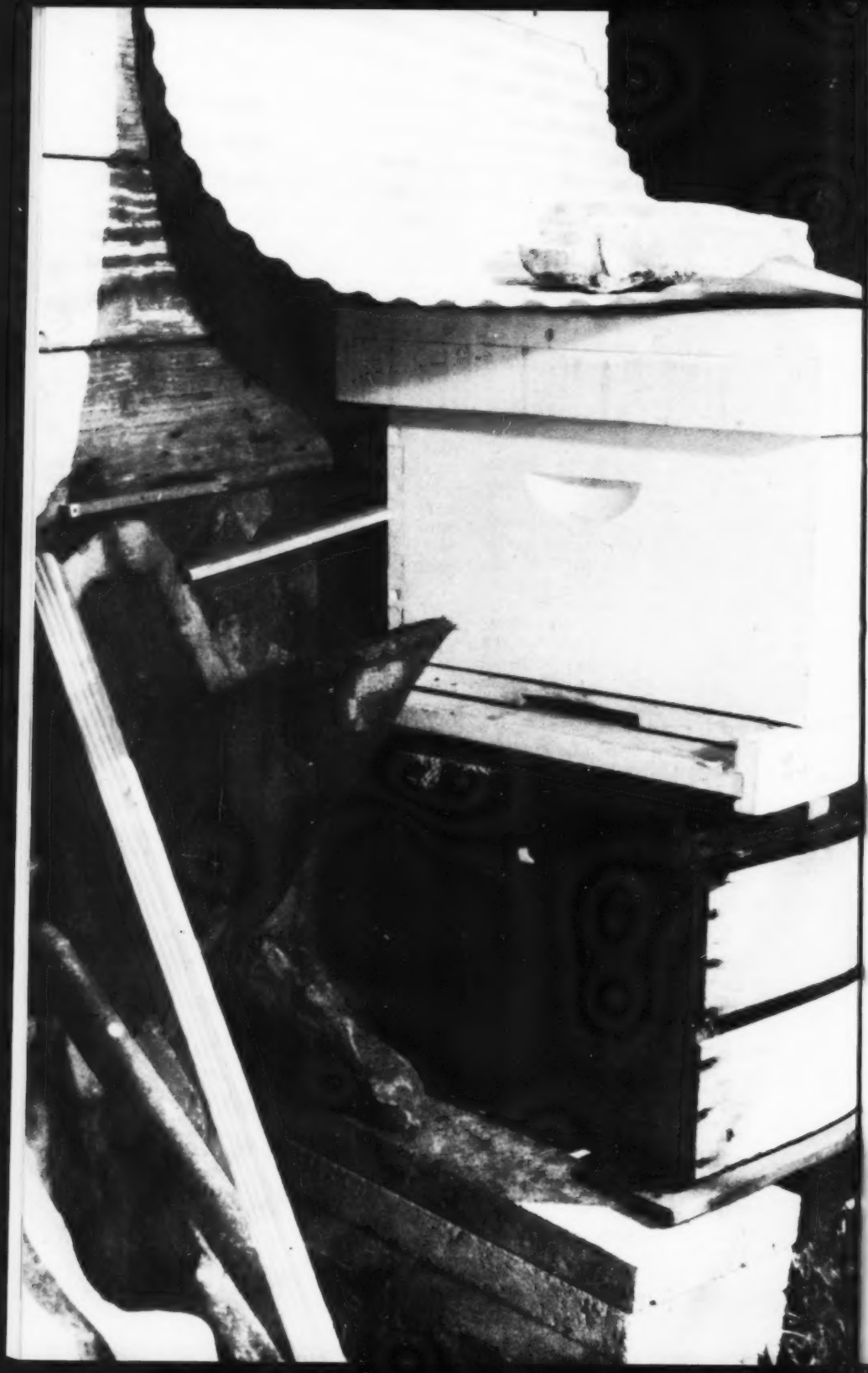
From fruit bloom until sometime in July all colonies are checked weekly for queen cells. It is during this time when the honey flow starts that most careful judgment must be used in giving the colonies supers. The comb honey supers should be placed on the hives only when the flow is well started so that the bees are forced to enter the supers with a rush. Some years the flow does not start off well so one needs very good judgment and this is obtained only from long experience and keen observation. However, any good beekeeper with a number of years of beekeeping to his credit should have little difficulty in becoming skillful in supering the colonies at the start of the flow. If it is the practice of the beekeeper to reverse the brood chambers for swarm control he may do so at this time with no ill effects.

When the comb honey supers are placed on the hive at the start of the

(Continued on page 376)

Adequate ventilation is an absolute necessity.

A well filled comb honey super during a flow.



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A colony space be problem without

THE FIR onies w March 22, persedure containing shallow fr red to the in Jere's tunnel ru opening a (I later ha the bottom when the moved.)

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On Ma who lives miles out of bees u house; a through t was too n laying hou moved. O plete hive the entran

These picture with the bee held to build the relation entrance; and above the hi of the hive

Amateur Evicts Bees

A colony of bees had inhabited the space beneath the building. The problem was how to get them out without injuring the building or bees.

CHARLES CYRUS
Austin, Texas

THE FIRST TIME that my three colonies were examined in detail on March 22, 1958, I found a sealed supersedure queen cell. The deep frame containing the sealed queen cell and a shallow frame of honey were transferred to the observation hive, and set up in Jere's bedroom with an entrance tunnel running through the window opening and screen wire to the outside. (I later had to put new screen wire on the bottom of the window screen frame when the observation hive was removed.)

In due time the queen hatched out, mated, and started laying. All members of the family were interested in the activities of the bees as seen in the observation hive in the convenient-to-observe location in the bedroom. Jere took the observation hive to school for two days at a time for members in the science classes to observe.

On May 18, I heard that a friend who lives about three and one-half miles out in the country, had a colony of bees under the floor in the washhouse; and since the bee entrance through the foundation of the house was too near the trail going to the hen laying house he wanted to get the bees moved. On May 24, I set up a complete hive with one deep super near the entrance hole through the foundation. The one deep frame and one shallow frame with the bees and the queen from the observation hive became the nucleus for attracting the bees from the wash house into the hive.

These pictures show the screen wire cone trap with the bee-proof gasket made of an old sheet held to building foundation with rocks and props; the relation of the cone trap exit to the hive entrance; and the piece of corrugated sheet metal above the hive to keep the rain from the roof out of the hive entrance.—Photo by John Woodruff.

For the trap, old window screen wire was used to form a cone about 9 to 12 inches long, about 12 inches in diameter at the large end and with a hole about ⅜-inch in diameter at the tip of the cone. The cone was laced over a hole in a flat piece of screen wire about 20 by 24 inches in size with wire usually used for wiring frames. Since the foundation to the wash house was native stone and cement, the outside surface around the hole the bees were using as an entrance was rather irregular and rough.

My problem here was to procure a bee proof seal between the screen cone trap and the rough surface of the wash house foundation. My wife furnished me with an old bed sheet and a large needle and a spool of heavy thread. I took a piece of the sheet about four feet long and started rolling it on one edge. When the roll was about 1½ inches in diameter, I sewed the roll down its length. This roll of old bed sheeting was sewed on to the screen wire trap on the side opposite the cone in a circular position some 12 to 15 inches in diameter. In this position the rolled sheeting made the bee-proof gasket between the screen wire trap and the rough irregular wash house foundation.

The hive at the extreme left contains the colony taken from under the "wash house". This hive, and the other one near it face south, while the other two hives face east. A slight offset of each top super permits escape of moisture.—Photo by John Woodruff.

When I was ready to put the screen wire trap over the bee entrance through the rock foundation, and on all other occasions when necessary to use smoke, I used a Hive Bomb of canned smoke. My friend was well pleased that I did not have to chance a live spark under his wash house from the regular smoker.

The trap was placed over the entrance in the rock foundation and held in position by large flat rocks at the bottom, a piece of pipe of suitable length and several sticks propped against it. The nucleus hive was placed so that the hive entrance was some two inches lower than the escape hole at the top of the cone. A three-foot length of corrugated sheet metal roofing held in position by a large stone on top of the hive kept the rain drip from the wash house roof, out of the hive entrance.

As mentioned earlier, the nucleus hive and trap were set into position on May 24. On June 21, since no more bees were in sight in the cone of the trap, the trap was removed; and the robbing started. The bees in the hive then robbed the honey out of the place the swarm had been. By July 4, apparently the robbing was completed as no more bees were going under the wash house, so the colony was moved back to town and set up in the back yard.

"FLETCH'S BUSINESS GOT SO BIG HE GIVES HIS DAD AN ALLOWANCE NOW!"

The smiling chap above is Bob Howland of the Regina, Saskatchewan, Bee Club. Bob is preparing to distribute packages of bees to club members in the Regina area. Beekeepers come down to the express shed to pick up their bees. Bob checks them off on the list he keeps of people who ordered packages. The trucking of package bees is becoming more popular, so package bees are not so often seen at express sheds now. The packages are from Penner's, Hamilton City, California.

A Busy Bee Club

D. M. McCUTCHEON
Provincial Apiarist
Regina, Saskatchewan

REGINA, SASKATCHEWAN, is situated on the level, treeless prairie. The soil and climate of the area make it particularly suited to the growing of hard spring wheat. This area then is hardly a likely spot to expect much interest in beekeeping. Nevertheless, the Regina and District Bee Club has a yearly membership of over 40 persons. These beekeepers keep nearly 300 colonies of bees.

South and west of Regina a bee can usually find little nectar since there are mainly wheat field ins evidence. However, a few miles east or north, changes are noted. Waste areas and meadows with native trees and shrubs are found. This growth provides spring nectar and pollen as well as shelter for apiaries. Many bee club members locate their apiaries in these areas where willow, buffalo berry, wild fruit bloom, dandelions, caragana, silver willow and buck brush provide spring nectar and pollen. Sweet clover, wild mustard and alfalfa provide nectar for the main honey flow. Beekeepers here consider the season a poor one if they don't harvest over 100 pounds of honey per colony.

Why do local beekeepers band together to form a local bee club? One of the main reasons is to facilitate the group purchasing of package bees. Only 15 per cent of the colonies are wintered. The rest are killed in the fall and replaced with package bees the following spring. By having the club purchase packages in volume, the individual member gets a lower price and better

(Continued on page 379)

Factors of a Honey Crop

DR. E. C. MARTIN
Entomology Department
Michigan State College

Although the chief value of honeybees in the national economy is to pollinate fruit and seed crops, they are kept by beekeepers so that they may produce a crop of honey for sale. A beekeeper's profit is influenced greatly by the yield of honey which he receives from each hive. This talk attempts to analyze the factors which influence the size of a honey crop.

THE FACTORS of a honey crop may be resolved under four main headings:

(1) The presence of nectar secreting plants.
(2) Weather suitable for secretion and gathering.
(3) Peak populations of bees in time for main nectar flows.
(4) Physical ability of the bees and the morale of the colony.

Regarding factor (1) "The Presence of Nectar Secreting Plants".

(a) Beekeepers normally depend upon wild and cultivated plants of the area.

(b) It is not normally practical to plant crops specifically for the use of honeybees.

(c) The commercial beekeeper is largely at the mercy of agricultural practices in his area.

(d) The beekeeper has been hard hit by the accelerated trend to cut legumes early for hay and grass silage.

(e) More intensive care and use of land for cash crops during periods of agricultural prosperity tends to decrease honey yields.

(f) Honey plants can be increased by:
(1) the use of clovers or other honey plants on roadsides and waste places.
(2) Greater production of legume seeds.
(3) More strategic placing of apiaries close to the plants.
(4) Further study of honey pollen plants for use during the whole season.
(5) Further study of soil requirements for nectar secretion.
(6) Breeding plants for nectar secretion.
(7) Planting honey plants by beekeeper-farmers.
(8) Proper use of insecticides to control harmful insects on legumes and other honey crops e.g. potato leafhopper, spittle bug, lygus bug, white grubs.

Regarding factor (2) "Weather suitable for secretion and gathering".

(a) Weather is a matter of prime importance to honey production.

(b) Correlations between weather factors and hive records have been worked out in many places. Results have been indefinite because

the factors are complex and interrelated.

(c) More recent studies of the effect of controlled weather factors on the development of nectar plants and their nectar production should yield more valuable information.

(d) Sugar is manufactured by the action of sunlight on leaves. (This is the ultimate source of our food, fibre, and much of our power.)

(e) Healthy, vigorous plants produce more nectar than stunted plants.

(f) With plenty of moisture available it appears that maximum hours of intense sunlight are best for growth and nectar secretion in most important honey plants.

(g) Adequate water available to the plant is correlated with nectar secretion. The most favorable amount of rain varies with the soil type.

(h) Temperature has a marked influence on plant growth and nectar secretion. Honey flow may be influenced by temperature at the time of flowering and also by the effect of temperature pattern on plant growth throughout season.

(i) Warm days and cool nights favor secretion of nectar as long as the nights aren't too cool. Scale records indicate best results in clover areas at temperatures of 80° - 90°F.

(j) High humidity makes more dilute nectar but apparently does not affect the amount of sugar produced.

(k) Cold temperature, high wind, rain, and threatened storm keep bees in the hive.

(l) The amount and concentration of nectar influences the number of bee visits to plants. This in turn affects pollination.

(m) Tests by Shuel indicate that the breeding of plants for high nectar secretion has practical possibilities.

Regarding factor (3) "Peak populations of bees in time for the main nectar flows".

(a) Providing they work efficiently and for long hours, the more bees there are, the bigger the crop.

(b) This factor is entwined with (4).

(c) The queen can only lay in the spring in proportion to the build-up of worker bee population.

(d) Pollen supplement early in the spring can stimulate rapid build-up a great deal.

(e) A dwindling food supply leads to reduced egg laying. This may be controlled by the nurse bees reducing the amount of royal jelly fed to the queen.

(f) Bees will throw out drone brood and later worker brood if the food supply becomes nearly exhausted.

(g) Improved swarm control is necessary with strong colonies.

(h) It is most practical to provide good queens, food, and conditions for rapid population build-up and divide the strongest colonies so that peak populations will coincide with the beginning of the main honey flow.

(i) The two queen methods of beekeeping can be very successful but require an intimate knowledge of details.

Regarding factor (4) "Physical ability of the bees and the morale of the colony".

(a) Measurable characteristics such as tongue length, size of honey stomach, speed of flight, disease resistance etc., can be bred for.

(b) Breeding for increased honey production becomes very much involved with colony morale and the other 3 factors. e.g. out of 2 hives of equal strength one gathers more honey. Is this physical ability or colony morale?

(c) Colony morale is affected by the desire to swarm, supersedure, balance of bees of different ages, living and ripening space, temperature inside the hive and probably many things still not understood.

(d) In practice morale means the maximum number of nectar gatherers making the maximum number of trips every day during honey flows.

Our Cover Photo

THIS IS AN OBSERVATION GLASS HIVE in the garden of The Institute for Beekeeping in Bonn, Germany. The man you see is F. Eberhard who takes care of the hive and the bees belonging to the Institute. He also explains to visitors of the Institute, facts about bee behavior inside the hive.—Photo sent by W. W. Wittekindt, Bonn, Germany.

The Hazards of Pollination Service

Do you know the responsibilities of the beekeeper who provides pollination service? One beekeeper who did not was recently sued for $16,000 by an alfalfa seed grower.

DR. J. E. ECKERT
Apiculturist, Dept. of Ent.
University of California
Davis, California

THERE IS AN old saying that bees should be expected to do the unexpected. If one is observant enough, something new and different can be found every time a hive is opened. The same situation can be found in the field of public relations when bees are brought into an orchard or field to "help" set a crop of fruit or seed.

The beekeepers and the grower generally come to an understanding about the number of colonies, strength of colonies, time and placement, management and the terms of payment. The contract may be evidenced in writing or may just be an oral understanding between the interested parties. Generally, some mention is made in regard to the dangers of pesticide applications while the bees are in the area, both on the part of the grower and of his neighbors, and

the extra expense involved in case the bees have to be moved out and then back again when toxic substances have to be applied.

Sometimes the contracts are more complicated in that payment for the services of the bees are based on production of the fruit or seed, and may even include the amount of honey the bees produce, or consume, during the period. In this event, it has to be assumed that the beekeeper and the grower will so manage their respective functions as to produce the greatest amount of seed or fruit under existing conditions. The beekeeper is supposed to know his bees and how to manage them for the best service in pollination and the grower is supposed to use every effort to keep the plants in proper condition to yield maximum harvest "under the existing conditions".

A recent occurrence in court demonstrated that the beekeeper should not take this last sentence too lightly, and I thought it to be of sufficient importance to bring it to the attention of all beekeepers who rent their colonies for pollination. I will not mention any names but the facts can be verified without too much trouble.

A beekeeper who had rented bees for 20 years or more was sued in a Superior Court for $16,000 on the grounds that "he neglected to care for his bees to the extent that they had become honey-bound and so did not work the blossoms of the alfalfa field; that because of said neglect, the field did not yield the amount of seed that grower deemed it should have yielded, resulting in a financial loss in the amount of the suit". The basis for the suit of the plaintiff was that when the bees did not have adequate room or were not given the proper care, they did not fly or work the alfalfa blossoms, and the neglect of the beekeeper was the direct cause of the poor crop of seed.

An apiary inspector testified that he had examined a portion of the colonies, had found some of the hives full of honey but did not comment on the "flight of the bees". Another commercial beekeeper, who had colonies on an adjacent seed field, testified that he had observed the hives of his neighbor at the time of the inspection and noticed that the bees "were not working".

He advised the court that he worked his bees every 12 to 15 days during the blooming period, took off honey and gave empty combs to "make sure that they had plenty of room". A neighboring farmer testified that he had on several occasions observed the colonies on the plaintiff's field and had noticed that the colonies were not working, that many of the bees located on his adjacent field were visiting the plaintiff's field.

The defendent testified that he and his helper had supered the colonies about 10 days after they had been placed in the field and to the extent of supplying sufficient room for the period of the bloom; that although he did take a trip to Alaska, his helper had visited the colonies two or three times to see that they were in good condition and needed no more room; that on his return he had taken what surplus honey the bees had and then reduced them to two stories for the fall without the addition of more empty combs than were then on the hives. Neither had contacted the grower during the busy summer season as they deemed it unnecessary to do so. They had received no complaint from the grower about the bees, until about a year after the beekeeper attempted to collect his rental. Two years later when the beekeeper placed the account with a collection agency,

(Continued on page 371)

"I know bees, but ask your mother about the birds."

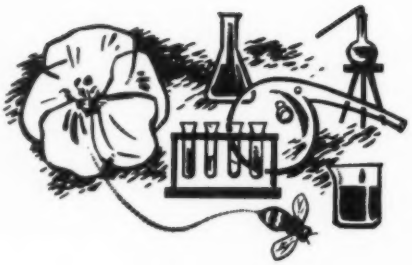
NEWS REEL

Mr. Gene Triplett of Lenoir, North Carolina, here uses a "Scythette" to cut grass around his hives. He says it doesn't seem to annoy the bees in the least. The "Scythette" is manufactured by Hoffco, Inc., Richmond, Indiana. Also note the empty oil cans he uses for a hive stand.—Photo by W. A. Stephen.

In response to a mention in "From Foreign Lands" that there are bees in the Roman Coat of Arms, Mr. Jan K. Vermaas sent this picture of a fountain with bees taken at the Congress in Rome. The fountain was made by Bernini, the sculptor of Pope Urban VIII.

The Lorain County Beekeepers' Association of Ohio, organized in 1919, is one of the liveliest associations in the country. It has held regular monthly meetings for the last 40 years. This picture of their honey display in a store window last fall was taken by Theodore W. Manns, Oberlin, Ohio.

Pictured here are two clever squeeze bottle honey containers distributed by Philander and Co., of Salt Lake City 2, Utah. The honey bear on the left wears a bright yellow hat until replaced by the spout top in the foreground and is translucent to show the color and level of the honey inside. The "Squeez Bee" is yellow and comes in a box that has many bee and honey facts printed on the side.



Research Review

DR. ROGER A. MORSE
Research Editor of Gleanings
and Ass't. Prof. of Apiculture
Cornell University, Ithaca, N. Y.

Blueberries from the Carolinas to Louisiana:

BLUEBERRIES have never done well in the southern states on a commercial scale because most varieties need a long winter resting period. The USDA has now developed new varieties for the southern states and blueberries require pollination by honeybees. Beekeepers in these areas might therefore watch to determine if any commercial plantings are started in these areas.

Two new blueberries. Agricultural Research 7: 16. 1959.

Queen Differentiation:

THE RESULTS of the laboratory rearing of over 1,000 honeybee larvae by Dr. M. V. Smith of Ontario have recently been published as a Cornell University Memoir. Although the actual mechanism whereby queens and worker bees are differentiated remains unknown, several interesting facts have been discovered.

It is of special interest that honeybee workers and queens, as well as intermediate forms may be produced without the larvae coming in contact with worker bees. Dr. Smith was successful in rearing 86 queen-like adults. In one case the artificially produced queen was introduced into a colony, mated, and produced normal offspring.

A part of the study was concerned with the biological testing of royal jelly. In addition to rearing queens on fresh royal jelly they were also reared on jelly that had been refrigerated six months, frozen one year, and lyophilized (freeze-dried) for 17 months. Thus the factor or factors responsible for queen differentiation appear to be quite stable.

Smith, Maurice V.
Queen differentiation and the biological testing of royal jelly. Cornell University Memoir 356. p. 56. January 1959.

Notes on European Foulbrood:

THE PRIMARY cause of EFB according to Bailey of Rothamsted, England is **Streptococcus pluton** (called by the name **Bacillus pluton** in most of the literature). EFB in the scale form probably does not cause reinfection of colonies. In the course of the disease some infected larvae survive and these deposit thin smears containing the bacteria on cell walls. It appears that in this form the bacteria is better able to survive and cause reinfection.

No explanation for the seasonal occurrence of EFB is given though some suggestions have been made in the literature. Some of the other bacteria associated with EFB are discussed in the reference below.

Unfortunately further study is needed on European foulbrood, though our understanding of the disease is improving.

Bailey, L.
Recent research on the natural history of European foulbrood disease. Bee World. 40: 66-70. 1959.

An Article on Insecticides:

BEEKEEPERS MAY sometime this summer be confronted with an article on insecticides. The author, in

(Continued on page 380)

FROM Foreign LANDS

Translated and Edited by ERIKA BARTH, San Antonio, Texas

More Honey From Shaded Colonies:

IT IS COMMON knowledge that shade is of considerable value to honeybees during warm weather, especially when colonies are located so as to be in the afternoon shade. Carrying on from here, Russian beekeeping scientists made some comparative studies. These experiments have shown that shaded colonies (in an air temperature of 79-81°F.) produced 10-40 per cent more honey than those not in a shaded area.

V. A. Nestervidskii. USSR. 1958.

Potency of Bee Stings Varies with Season:

THE POTENCY of a bee sting varies with the time of the year according to Dr. Stanley Gooding. It is at its worst when the bees are on the heather. Hence the beekeeper should never interfere with his bees when he has taken them to the heather. One such sting killed a small frog, but it took five such stings to kill a frog when the bees were fed on sugar and water.

African Beekeeping. June 1958.

Danger of Eating Pollen:

DR. MOREAUX of Nancy, France, reports the following case concerning the intake of pollen, and therefore of interest to honey producers:

During the summer of 1957 a woman brought her 13-year-old son to him for an examination. The boy had been suffering from recurring nose bleeds, excessive tiredness and nausea for several weeks. Examination showed that the blood vessels in the nose ruptured extremely easily. Coagulation was very poor.

Upon further investigation it was found that the mother of the boy suffered from hemorrhages. Before Dr. Moreaux diagnosed a tumor of the uterus, the father began to complain of frequent dizzy spells as well as bloody stools. These related symptoms of the whole family pointed to some kind of dietary deficiency.

The father, a beekeeper, had read articles in the bee journals, pointing out the medicinal value of pollen. He thereupon began to feed pollen to his family and to himself at the rate of one to two teaspoons of pollen daily for three months prior to the examination by Dr. Moreaux. He himself had gathered the pollen from his bees and stored it in his cool cellar.

Microscopic examination showed the questionable pollen to be from the giant honey clover (Melilotus off.). Numerous yeast cells were formed in the pollen and fermentation had begun. This fermentation produced a substance known to rupture blood vessels, retard coagulation of the blood which can result in severe internal and external hemorrhages.

As soon as the family stopped eating pollen all of their complaints disappeared without having received any medication whatsoever.

Dr. Moreaux is not trying to belittle the medicinal value of pollen. He merely points out that people should not try to gather and eat pollen on their

(Continued on page 380)

Editorials

Possible Reason for Winter Bee Losses in Some Areas

WE HAVE RECENTLY received reports of heavy winter losses in the north. Ordinarily bees winter quite well in northern areas, provided the colonies are populous in the fall, with a good percentage of young, vigorous bees, and provided they have an adequate amount of honey and pollen in the combs available to the bees during the winter and early spring.

It seems possible that some of these losses may have been due to an insufficient amount of honey which would naturally result in starvation. Beekeepers, with limited experience, may imagine that their bees have adequate stores during the winter, when as a matter of fact there may be a shortage of food in the hives.

It cannot be emphasized too strongly that combs of good quality honey should be directly above the winter cluster, especially during long, cold spells. During prolonged cold weather when bees cannot take cleansing flights, the cluster moves upward on to fresh honey, hence the necessity of having an ample amount of stores, properly placed so that it may be available for the bees.

If the bees consume all of the honey in the combs and reach the top bars of the frames it is usually difficult for the cluster to move laterally or sidewise on to fresh honey even though there are some combs of honey at the side of the hive. If, however, the weather moderates enough to permit the cluster to relax, bees can then move on to fresh honey at the side of the hive.

The use of the food chamber hive which means a double-story hive with the upper story or super well filled with honey, in addition to some honey in the lower super, has meant successful wintering for hundreds of beekeepers over the country. However, if the two-story or food chamber hive is not properly used, it may become the equivalent of a single-story brood chamber, especially if there is very little if any honey in the lower chamber at the time bees go into winter quarters.

One way to be reasonably sure of getting the food chamber well filled during the late summer and fall months, in addition to having 20 or 30 pounds of honey in the lower chamber, is to place a queen excluder under the food chamber sometime during early August. The queen is then confined to the lower story and the second story above the queen excluder should then be quite well filled with honey.

This manipulation of the food chamber hive seems especially applicable to areas where there is not a heavy fall honey flow. In sections where there is a heavy fall yield, the queen excluder may be placed over the second story, in which

case the bees are likely to fill the food chamber after driving the queen down into the lower chamber.

It is none too early in the season to plan for the late summer and fall management of food chamber hives. Those beekeepers in the north who experienced abnormal winter losses, due perhaps to starvation, should not permit a repetition of such experiences

Bees Do Take Granulated Sugar

THIS PAST SPRING, during adverse weather conditions, stores in some colonies ran dangerously low. Bees seemed to have consumed more stores than usual this past winter. It is said that no colony should ever have less than 15 pounds of sealed honey. We are wondering just how many beekeepers live up to this requirement. If all did, larger crops of surplus honey would be secured.

Feeding bees in the spring involves a great deal of work. Sugar syrup is obviously the best substitute for honey for bee food. Making the syrup and carrying it out to the bee yards takes time and labor. Roads leading to our yards were muddy and impassable this spring. Instead of feeding syrup we fed granulated sugar carried in 25 pound bags from the main roads to the apiaries and placed on the inner covers of hives with the center blocks of the inner covers removed so that the bees could easily get up to take the sugar. This puts the sugar directly above the clusters of bees and it is amazing how quickly they will begin to take the sugar, if they need it. Colonies that already have a considerable amount of sealed honey are not likely to take the sugar.

One advantage of feeding sugar is that the feeding can be done quickly since the sugar does not have to be made into syrup. During a dearth of nectar feeding granulated sugar does not get the bees stirred up as does the feeding of syrup or combs of honey. An inner cover will hold about three pounds of granulated sugar which would be the equivalent of a five-pound pail of sugar syrup made of two parts of sugar to one part of water.

While the feeding of granulated sugar may not be the orthodox method of supplying a substitute for honey to feed bees, it is a handy method, especially when bees are in urgent need of food. Bees will take the sugar when the weather is mild and when they can get out to collect water to soften the sugar granules.

Does Abundance of Drones Indicate Swarming?

WHEN WE OBSERVE freshly constructed drone cells quite early in spring, we know that these cells are built in preparation for the production of drones later on. When we find unfertile eggs or drone brood in these cells we know that young drones will soon be emerging from the cells. Early reared drones in populous colonies are usually old enough for mating at the time swarms are likely to issue.

An abundance of drones in a colony may indicate early swarming, unless proper swarm control measures are employed. An excessive number of drones may also indicate early supersedure of the queen.

A summary of an article that appeared in the journal of Economic Entomology, entitled "Drone Brood in Honeybee Colonies," by M. D. Allen, Bee Research Department, Marischal College, Aberdeen, Scotland, also mentioned in the April 1959 Bee World has the following:

"The number of sealed drone cells in each of seven hives, was counted and compared with the total area of sealed brood present. From a series of such examinations spread throughout the season, it is shown that whereas the period of greatest total brood was on the average from early May to late August, the period of maximum drone brood lasted only half that time (mid-June to end of July). The proportion of drones produced varied considerably from colony to colony and no correlation with swarming could be established in the five colonies which did so."

We have observed that some of our colonies that are the best producers of surplus honey, usually have an abundance of drones throughout the honey flow.

It seems possible that drones, aside from performing the function for which they were created, mating with virgin queens, may have other functions not generally recognized. Drones may influence the morale of colonies.

Live and Learn

PROPOLIS PETE

I LIKE COMB HONEY. And every year, ever since I started to keep bees back in 1935, I have tried to produce it, not only for myself, but there is a demand for it from the summer people who spend their vacations around here. You couldn't call the demand very strong, but I could sell probably a hundred sections without putting too much of a strain on the market. The local people won't buy it. They don't know what it is. This isn't a bee country, and very few of the first settlers (or their descendents) kept bees. They got their sweets from the West Indies molasses trade. Since molasses ferments easily, that is not all that they got from it.

Right from the start I was in trouble, and it is only in recent years that I ever did get any. I tried every system in the books, and invented some of my own, but no luck. The minute I put on section supers the bees started swarm cells. By the time they got over that the season was done. It was not only frustrating, but expensive, for I would lose the extracted production from the selected colonies.

One year I tried putting a section super on a regular two story colony, instead of the usual extracting supers. Glory be, the bees filled it. I got nine sections that would grade fancy in any man's contest, and a dozen or so that ranged from good to fair. With that for a beginning, genius got busy, and I tried putting section supers on a package that had built up to the point that the bees needed the second body. Darned if it didn't work. I started three packages the next year, put comb supers on all three, got 68 fancy sections, plus quite a few that graded good to fair.

One of my problems always has been the fact that the only flow that is heavy enough for section honey comes early. I have to be ready shortly after the middle of May to catch the locust and vetch. Some years it is later, but generally it will be sometime between the 15th and 30th. Since packages will lose for the first three or four weeks, before bees from the new brood are old enough to work, this means I should get early packages. Last year it was so cold and wet down South that the package men were very late, and I did not get mine until the middle of April even though I had ordered in January. So, the general result was that my packages were not able to build up, and from three colonies I got a grand total of 12 salable sections, none of which would grade fancy.

Last Winter I Got a Brilliant Idea

If three pound packages would work in a favorable year, four pounders should do wonders. So I ordered three of them to be shipped on March 30th. They were sent out right on time, got here on April 2nd in perfect condition by courtesy of Uncle Sam's postal workers (and the distress of the local mail handlers). It was a cold raw day when they got here. The weather man couldn't make up his mind whether to order hail or snow, so compromised by sending both. In between, it rained, and the poor bees were clustered so tightly that I didn't bother to go through any ritual of installation. I just dumped them in the hive, closed it up and left them for three days. The bees were in the hive within half an hour after arrival.

Would you believe it, that one of those colonies had eight frames of brood on April 25th? So help me, it's true. I don't mean brood in eight frames, I mean eight frames of brood. The end frames had over half the cells with larvae, and the center frames were pretty nearly 80 per cent brood. Only the corners were filled with honey and pollen. Incidentally, I hived these packages on the combs of honey and pollen that were left when some of my colonies got a dose of airplane dusting last summer.

At this writing, May 2, the dandelions have not yet started to bloom, so the locust and vetch must be a good four weeks off. Problem is what to do with such colonies. I gave them their second body of deep frames, and will use them for extracted. The other colonies are good, and seem to be right on schedule for this season, which is a little late but otherwise promising.

Sourwood (Oxydendrum arboreum).

Let's Talk About HONEY PLANTS

HARVEY B. LOVELL
University of Louisville
Louisville, Kentucky

SOURWOOD (**Oxydendrum arboreum**) is a honey plant with many interesting characteristics. This spring the local newspaper carried many ads of the Lily-of-the-valley-tree and praised it for its attractive flowers and brilliant red foliage in the fall. The Lily-of-the-valley-tree proved to be merely another name for sourwood. Sourwood is largely confined to the southern Alleghenies where it grows up the sides of the steepest and most rocky slopes in sour soil. Even the leaves have an interesting sour flavor.

North Carolina. W. A. Stephen writes that sourwood blooms from June 25 to July 29. The honey is water white with a slight pinkish cast, with a good body and distinctive flavor.

The largest surplus is 200 pounds although the average is much smaller. It fails to produce a crop in his area only once in four years.

Tennessee. According to Carl M. Teasley, sourwood honey is water-white with a medium body and the best-ever flavor and always brings premium prices. His largest surplus is 225 pounds with an average of 60 pounds. It fails about one year out of three. Cool nights are a necessity to keep the nectar flow high, and dry weather prolongs the flow. It yields best at altitudes above 1000 feet. It secretes more nectar early and late and less in the middle of the day. In 1948 bees gathered honey so fast from June 10 to June 20 in Polk County in the Cherokee National Forest that they filled on an average of three supers per hive, and some got so crowded that they built combs on the outside of the hives.

Virginia. John M. Amos writes me from Blacksburg that sourwood blooms from June 20 to July 25. On good years many colonies will make as much as 200 pounds of fine white honey with a good body and an excellent flavor.

Kentucky. Sourwood blooms heavily throughout the eastern mountains but there are not many large beekeepers there. Joe Morris of Raccoon, Kentucky, averages 20 to 25 pounds with his largest surplus 50 pounds. He describes the honey as very white with a slight touch of sour.

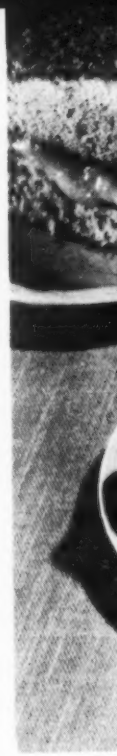
Georgia. W. F. Clayton of Quill in northern Georgia reported that sourwood has failed with him very rarely. Strong colonies store about a super per week in a good season. His best colony stored 250 pounds (Gleanings, October 1930).

Because of the great demand for sourwood honey most of it is sold at or near the apiary and little of it reaches the outside markets. The average price for chunk comb honey in two and one-half to three pound jars is $2.00. I visited Ernie Trentham in Marble, North Carolina, a few years ago, just as he was packing his sourwood crop. He told me he removed all his old supers and replaced them with supers with new foundation when sourwood first came into bloom. He removed the supers as soon as the trees stopped blooming about six weeks later. He uses large mouthed jars and carefully stuffs in the chunks of comb until the jar is full. Enough honey runs out to fill the spaces between the combs. He explained that the longer blooming season is due to the change of climate up the mountain slopes. Sourwood begins blooming in the valleys and each week blooms a few hundred feet farther up the mountain slopes. His honey was the most delicious I have ever tasted. The comb was so delicate that it almost melted in my mouth. (He insisted that true sourwood comb is much too delicate to extract — the comb flies to pieces). The flavor was very delicate and delightful.

I have frequently found amber honey sold as sourwood honey in the mountains. This is usually sourwood mixed with tulip poplar. The poplar blooms earlier but the honey is often not taken off in time to prevent mixing. The mixture has a very pleasing flavor and is usually sold as mountain honey, as it should be.

Apicultura Moderna. This is the name of a book on Mexican beekeeping recently sent me by the authors, Dr. Dario Espina and Professor Gonzalo S. Ordetx. It may be obtained for $4.00 from Editorial "Lex", Havana, Cuba. One long chapter pp. 311 to 344 is devoted to the principal honey plants of Mexico with nine photographs. Over 400 species are listed, many of them familiar to me in Florida, Texas, or California, such as alfalfa, mesquite, citrus, retama, palo verde, China-berry, redbud, sotol, all-thorn, huisache, palm trees and many others. Many others belong to familiar genera such as **Rhus, Lippia, Cissus, Opuntia, Eucalyptus,** and **Euphorbia.** Several of the species have already been discussed in this column such as dandelion, coral vine, brazilbrush, and California poppy. Beekeepers living in the southern tier of states will find this book of considerable value to them, provided they read Spanish.

This article completes my fifth year as a columnist for Gleanings. During this time we have published 60 articles with 58 photographs of honey plants. Collected together, they give beekeepers pictures of nearly all the important species, especially when used with any manual of honey plants.



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The topping is baked on this luscious honey almond cream cake.—Photo courtesy Kellogg Co.

For Busy Times

MRS. BENJ. NIELSEN
Aurora, Nebraska

THERE IS SO MUCH to be done outside, and the weather is so lovely we like to spend most of the time out-of-doors. When we do come inside, all our gardening muscles aching and protesting, wouldn't it be nice to have a cook? The next best thing is to rely on good do-it-ahead recipes so it does not take too long to whip up a meal. With a good dessert in the offing perhaps the family will forgive a sketchy meal now and then. Too, many a hurried up meal may be given a crowning touch with flavorful honey-way muffins that bake while meal getting is under way. It's no trick at all to add muffin magic to quick meals if you remember to combine dry ingredients in proportion and keep on hand for just such times. Add liquid ingredients in a twinkling, light on the mixing and pop into the oven. Come on family—doesn't it smell good in the kitchen?

Honey Almond Cream Cake

Two cups sifted cake flour, 2 teaspoons baking powder, ¼ teaspoon soda, ¾ teaspoon salt, ½ cup shortening, ⅓ cup milk, ½ cup sugar, 1 teaspoon vanilla, ½ teaspoon almond extract, 2 eggs, ½ cup honey, 1½ cups oven-popped rice cereal and 1 tablespoon melted butter.

Sift flour, baking powder, soda, and salt into mixing bowl. Add shortening, milk, sugar, and flavorings. Beat until smooth. Scrape bowl and spoon often during mixing. Add eggs and beat well. Add honey and beat about 150 strokes.

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The Check Off Plan Doesn't Cost, It Pays

HARLEY K. KITTLE, Chairman
National Check-off Plan Committee
Riverton, Wyoming

"WHEAT FARMERS in Moffat, Rio Blanco, and Routt Counties, will vote this spring on joining with wheat producers in 29 other counties in the task of marketing Colorado wheat.

"The 29 counties, most of them in Eastern Colorado, joined last year under the state marketing act to create the Colorado Wheat Administrative Committee. Each member pays four mills per bushel into a fund utilized to find new markets.

"The committee has sent survey teams to 18 foreign nations, conducted trade fairs overseas, brought foreign delegations to Colorado and opened sales offices in Lima, Peru, Rotterdam, Holland, and New Delhi, India."

The above article appeared recently in the Rocky Mountain News. It seems quite applicable to the honey industry. Surely we must realize that the government cannot go on forever subsidizing agriculture and other industry. Even if it could, the support price would of necessity be lower than actual value and perhaps below the cost of production. Evidently those Colorado farmers are not satisfied with the subsidy on wheat. Evidently they are concerned about the mounting surplus and lack of effort made to distribute the product to the hungry people of the world. Evidently they are doing something about it. Why can't we? This plan entails compulsory participation since it is set up under a state marketing act. Our Check-off plan is voluntary.

Recently the writer received a letter questioning the efforts made by the Honey Institute in promoting sales of honey saying that it had never spent one dime advertising his state's honey and had never done anything except to sell some literature to the beekeepers for their distribution and that the Institute is doing too little to promote the sale of honey.

A somewhat lengthy reply was made in an attempt to straighten out this misconception on something like this: Our Honey Institute is so bridled with lack of funds that it must use to a large extent advertising that does not cost anything, such as tie-ins with our national advertisers. The distribution of literature (at cost) to members who in turn get it before the public (usually without cost) is another low cost method of promotion. And furthermore, since the Institute is working for all of us over the nation it would be neither ethical nor desirable for it to promote one state's honey over another any more than to carry on an advertising program for some individual packer. The Institute must not be partisan.

Please give attention to the fact that the Institute must advertise in a way

that will not cost anything, and that the beekeepers distribute the literature or get free space from the papers, or get free radio and TV time as a public service. Almost all the national advertising done for honey is on a free, no fee basis to the industry. Are we so poor that we must stand in line for a handout? Anyone knows that in accepting a handout that which he receives is what the donor least wants for himself. The receiver must be content with the leftovers or second rate quality. He does not have the right to demand the best or the most but must be content with the least and the poorest. And so it is with our industry's advertising program. Most of the free tie-ins we get are because the tie-in will help sell more of the basic product. Of course, it does help sell our product too and is and should be appreciated.

According to the recent report sent out by the Honey Institute its income for 1958 was slightly over $24,000 while the national production of honey was over 265 million pounds. If all 265 million pounds had been sharing the cost it would have been slightly more than .009¢ per pound. Pretty infinitesimal don't you think?

Considerably over half of the Institute's income was spent for salaries, office expense, postage and other things necessary to the administration of the institution. Those expenses seem quite nominal but consume in total most of the income. How much more could it have done for the promotion of the sales of honey had its income been 2, 3, 4, 5 times as much? This could have been accomplished with very little added office expense. So it seems quite obvious that most additional income could be devoted entirely to sales promotion. It also seems quite obvious that the most equitable method of raising those funds is through the Check-off plan. Will you support it? Let's all get behind the Check-off plan in 1959 and give it the big boost it needs. Remember, the Check-off plan will not cost, it will pay.

Do You Want a Suprise?

CARL M. TEASLEY, Ocoee, Tenn.
Deputy Apiary Inspector

IF YOU WANT to surprise yourself and your bees, next time you go through a hive select a brood frame well covered with bees. Imagine you are Tarzan of the Apes and place your face within 8 to 12 inches of the frame and yell loudly in a tone of low C or thereabouts. All bees within an 8 to 10 inch circle on the brood will remain still as though stunned.

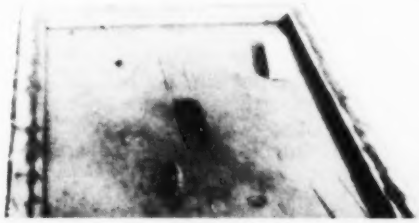
I tried this sound idea last August in my bee yard after reading about the experiments at Cornell. Always had an idea that the bees had no ears, but they can hear us humans, after all. So guess we'd better be careful as to what we call them.

[If you try this we suggest you wear a bee veil.—Ed.]

It's an Idea

MILTON H. STRICKER
Stockton, N. J.

TO KEEP TRACK of the type queen in your colonies, the introduction cage can be left on the escape board. Date and other data can be pencilled on the cage.



Bees are up on posts to keep them away from enemies.

Some Common Bee Enemies in India

The bees of India are rarely if ever bothered by enemies and diseases common to the American continent, but have a host of their own problems!

S. S. GANDHEKER
Tambaram (Madras), India

IN SOUTH INDIA the apiarist is not bothered with the maladies that decimate bee colonies in Europe and America. We are practically free from the European and American foulbroods and also from the nosema and acarine diseases, all of which seem to be dangerous or infectious. The Government of India is chary of importing bee colonies from abroad and it may well be a protection from this kind of infection; but such a policy keeps out also better kinds of queens.

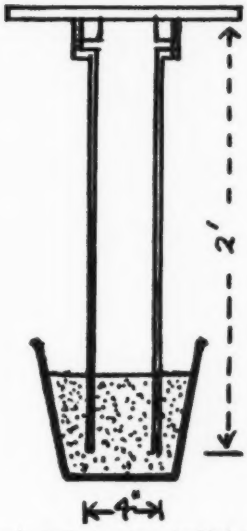
In the tropics the beekeeper has his own problems and headaches and some of them may be the common concern of beekeepers all over. One of our commonest enemies is the black ant. Predatory in its habit, it wanders about in bands everywhere and catches neatly

an unwary bee, bundling her up and carrying her away. Such stray losses may not amount to much but when the ants invade a hive, en masse, then it is woe to the colony. The colony usually bolts seeking a new home if the entrance is free from any queen excluder gate. If, however, the entrance is protected, as is often the case in a weak colony, a deadly combat ensues between the invaders and the bees; the ants being reinforced all the time. The queen being unable to get out, the bees fight to the finish resulting in the liquidation of the colony. Next morning one notices the floor board littered with dead bees, ants, queen and drones, the stores invaded and the hive in a sorrowful plight. Such wholesale losses are distressing to the beekeeper and they are common.

Strong colonies are fairly immune from such attacks and here again no hard and fast rule could be laid. Strong or weak we have found it best to provide a stand with a water-seal and many beekeepers might have done so in their way. Our method is described below and we find it effective and inexpensive.

A stone-ware soil pipe (cf. diagram) 2 feet long, 4 inches in diameter with a wider mouth at one end is fixed vertically in concrete in a flower pot leaving a space at the top, 2 inches in depth, for a water-seal. A one-inch thick plank 1 foot by 1 and one-half feet or of any desired size fixed on the open end with lugs serves as the seat for the hive. This makes a portable stand which could be fixed anywhere by burying the flower pot up to the brim. The photograph shows such stands in one of our bee yards.

Lizards are very common in these parts and being insectivorous they manage to devour quite a number of bees everyday. One way is to kill them, if you are slick at it; but they do manage to escape. There seems to be no other way of getting rid of them except by regular inspection and this kind of irregular killing. They lurk near the hive usually between the seat and the floorboard. Very often they are found inside the hive making a quiet, undisturbed feast of the bees and sometimes of the queen herself. A more important thing seems to be to prevent their entry into the hive. A queen excluder gate could no doubt do this but the gate is a hindrance to the pollen-carrying bees and



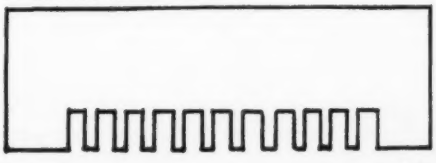
An ant stand. Soil pipe is embedded in concrete.

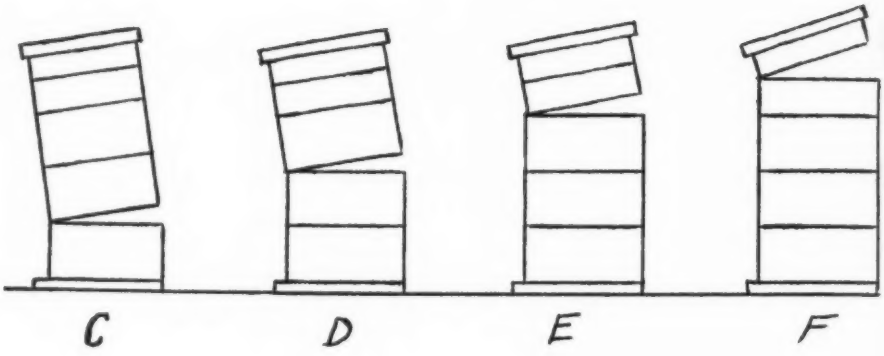
much pollen is spilt at the entrance as the bees are entering the hive. Further the drones are imprisoned or shut out and trying to get out or in they cause something like a traffic jam. A new kind of gate which would allow the laden bees and the drones free access and prevent the smallest lizard from negotiating it would be just the thing required. Such a gate, illustrated in the diagram could be made from a small wooden board, one-eighth by two by six inches with prongs cut on one side in the central portion half an inch deep with an intervening space of quarter of an inch or even three-eighths of an inch between prongs. When this is fixed in front to cover the entrance, several small openings are available for the bees and none for the lizard. By analogy to the queen gate this may be named the "lizard gate" as it prevents the lizard from negotiating it.

Belonging to the same family is the garden lizard, variously described as the chameleon or the blood sucker. It is bigger in size and can be spotted

(Continued on page 363)

Lizard gate which is placed at the entrance of the hive.





INTERLOOKING

ARTHUR M. SOUTHWICK
Waban, Mass.

PROFITABLE honey production requires reasonably efficient, intelligent, and timely use of equipment and labor of beekeepers and bees. The number of colonies which a man can profitably keep is limited by the time and strength available to him. A large part of this time must be spent in the apiaries ascertaining and ministering to the needs of the hives. Modern producing colonies occupy many stories and get very heavy. Periodic opening of them all to determine their condition is necessary, but only occasionally do they require examination of individual combs.

If individual combs are to be examined, the seal between all bodies should be broken by pushing a hive tool in and prying. Then the telescope outer cover should be inverted on the ground behind the hive, the upper stories set on to or into it, and a spare inner cover put on the temporary pile. One or more combs are examined in the bottom super, the second super is set back on the first super, the spare inner cover put over on the remainder of the temporary stack, then one or more combs in the second super are lifted out, examined, and replaced, and so on until the hive is closed.

The bottom super is examined first before many field bees have accumulated in it, and before it has become crowded with bees smoked down by examination of upper stories. This method is slow and entails a lot of lifting, smoking, and disturbance of the bees.

I have perfected a way to examine each story without taking out combs, removing any story, or disturbing the lowest chamber. This is done by tipping the upper bodies forward and looking between the stories while they are held in tipped positions. We call this method interlooking, and the special metal tool which is required to hold the upper stories in certain tipped positions we call an interlooker.

The first opening is usually made between the lowest and the second story as indicated at C; then progressively we interlook above as at D, E, and F. We look down between all combs in the chamber below each opening and up between all combs in the story above. Often we can omit some of the openings. For example, when we wish to determine if more room should be added we make a C opening only, judging by how much the bees cover the frames in the bottom story; but when we wish to see if honey is all sealed and ready to take off we may only open as at F.

Minutes consumed by the first method become seconds when the interlooking procedure can be used. Lifting is reduced to a small fraction, and disturbance of the bees is minimum.

ROYAL JELLY MAY SHOW WAY TO CONTROL CANCER

A MOST encouraging development has just been reported in an article in "Nature", a British science publication, that Royal Jelly may play a part in the control of cancer.

Laboratory work done under the direction of Prof. G. F. Townsend, Ontario Agricultural College at Guelph, J. F. Morgan of the Hygiene Laboratory Department of National Health, and Barbara Hazlett of the Therapeutics Deparment, University of Toronto, indicates that Royal Jelly inhibits the spread of cancerous cells in mice when administered at the same time as cancer cells. The results have been confirmed on almost 1,000 mice during a period of two years. Those not injected with royal jelly at the same time the cancer cells were administered died within 12 days on the average and those injected lived for a year.

Further work will doubtless be done to determine the possible value of royal jelly or the active constituent of the jelly in the control of cancer in human beings. Let us hope favorable results may be attained.

SOME COMMON BEE ENEMIES IN INDIA

(Continued from page 361)

easily and takes a heavy toll of bees. It makes itself scarce at the approach of danger and sometimes can be killed. One very good method, we have found, is to rear a cat. Cats are natural enemies of blood suckers and one cat is able to keep a small bee yard free of this pest.

Among the winged enemies we have the dragon flies which appear in numbers in the rainy season before and after a spell of rain and then account for a number of bees on the wing. A natural control seems to be the simultaneous appearance of birds which prey on these. Otherwise this is a pest against which one has no remedy. Bee-eater birds are small birds, pretty to look at, green or blue-chested with longish tail. They usually perch in company on the electric wires and catch bees one at a time by darting at them when they are flying and return to their perch with the catch. The loss to the bee world is not serious except when a virgin on her mating flight is lost.

Much has been written about the wax moth. It is only indirectly that it can be regarded as an enemy of the bee. Its caterpillar eats away the wax of the combs and thus makes life impossible to the bee. Colonies infested with wax moth quietly desert, seeking a better home. It is usually met with during the warm weather after the rains and weak colonies are prone to its attack. Regular inspection, removal of infested combs, cleaning up the crevices and the floor board brings this under control.

Cockroaches are a persistant nuisance. They make their home inside the hive laying eggs, and the egg cases, containing hundreds of eggs, are deposited just anywhere, in the crevices, under the top bar of the frames and often inside the cell. The only way is to kill off the cockroaches and to remove all the egg cases. After a time they are there again and regular cleanings are necessary to control them. They do not interfere with the working of the hive and are not to be regarded as enemies of the bees.

Another kind of nuisance are the frogs, toads, and snails which sit comfortably on the seating plank below the floor board. These are easily removed and not much of a bother except for the insanitary condition incident to them.

It is no small wonder that the bee manages to live through her short span of life in a world which is none too friendly to her. Not being a thinking animal she has no thought for the morrow and meets the incidents of life as they strike her. She dies when she has to, not knowing probably that there is such a thing as death. She lives in the present, oblivious of the past or the future.

Bees clustered at hive entrance may indicate lack of comb space and the hive may need another super.

A Talk to Beginners

"Too much advice is given by beekeepers who have quite forgotten what it is like to be a beginner — that is our trouble". — Beekeepers' News for July, 1957.

M. J. DEYELL

WHEN A HEAVY honey flow breaks suddenly it is sometimes difficult, if the beekeeper has a number of outapiaries, to put supers on all of the colonies in time to prevent congestion within the hives. It is amazing the amount of nectar a strong colony will carry in during a day. The majority of nectars are approximately 66 per cent water, therefore, a considerable amount of comb space is required for the storage of this nectar.

As brought out in a previous talk, it does no harm to put supers on in advance of the time they are actually needed, especially when supers containing drawn extracting combs are used. The bees get accustomed to going up into the supers and when the honey flow comes on, they are likely to enter the supers quite readily.

Congestion within the hives is said to be the main cause of swarming, therefore it pays to keep ahead of the bees.

Have Some Supers at Outyards

It pays to do this especially when wet, cool weather prevails. Sometimes it is impossible to drive from the road into the apiary due to wet, sticky lanes or roads leading into the yards.

In the past I have had to carry supers from the road into a bee yard. That is hard work. At present I have some supers piled up in each yard, ready to put on when needed. The supers are placed there in the fall and piled up mouse-proof.

How to Keep Queens in Cages

Occasionally queens from the south are received during cool, wet, weather and it is impossible to open hives to find the old queens in order to introduce the new ones.

Queens can be kept in a cool, dark room for at least a week without any damage to them. The room should be between 65 and 70 degrees F. A few drops of water sprinkled over the screen of the queen cages will supply the bees with needed moisture. When the weather is real hot, I have dipped the cages containing the queens into a bucket of water for a few seconds, then have shaken the water out of the cages. This moisture softens the candy so the bees can use it.

If it is necessary to keep the queens longer than a week, after most of the attendant bees have died, the cages containing the queens can be put into a colony, under an inverted inner cover with the screens of the cages facing down and placed over the spaces between the top bars of the frames, so that the bees can feed the queens through the wire screens.

Controlling Bee Moths

Strong colonies of bees with good queens are the best insurance against wax moths. Occasionally hives in which your colonies of bees died during the winter will be left at the apiary and after warm weather comes bee moths will get started in the combs of these hives. It pays to keep such hives in use. It doesn't take the bee moths long to destroy such combs if they are not watched.

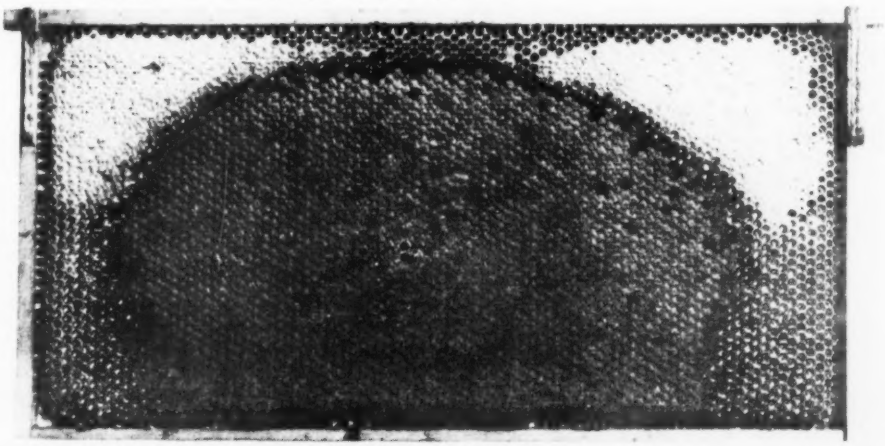
Combs left in an apiary house during warm weather should be treated with paradichlorobenzene, a white crystal which evaporates slowly in the air. This gas is not unpleasant to smell and not injurious to people except in excessive amounts. It is not inflammable and is non-explosive. Put a few ounces of crystals on a paper placed on top of the frames. Supers with combs may be piled four or five high and the crystals placed in the top super. Supers should be treated periodically during warm weather.

Having Nucs in a Yard for Rearing Queens

This can be done quite easily. It isn't necessary to have queen mating nuc hives, although they are handy to have, if available. One can use ordinary hives, each with a homemade division board that is fitted into the hive to reduce it down to the amount of combs

(Continued on page 368)

An almost perfect comb containing sealed brood and honey.



NEWS and EVENTS

SOUTH TEXAS
Beekeepers' Summer School

The big success of the third annual spring beekeeping School of the South Texas Beekeeping Hobbyists has prompted a summer session. Summer management and honey handling will be the theme of the sessions, according to Roland Sykes, Chairman of the summer program. The sessions will be held at 1-5 p.m., Saturday, June 20th at 537 So. Flores, San Antonio, Texas.

Program

Film: "Bees and Honey"
—30-minute sound and color movie
"The Overall Summer Picture"
—Mr. L. R. Bellinger
"Looking to the Fall"
—Mr. Roland Sykes
Film: "When Bee Meets Bee"
"Protecting the Summer Crop"
—Mr. Walter Barth
"Harvesting the Crop"
—Mr. Francis Engle
"Handlling the Crop"
—Mr. L. R. Bellinger

G. EARL HUFF
Assistant State Apiarist for Indiana

In order to give the Apiary Section of the Division of Entomology more depth in dealing with permits and other administrative matters, Mr. John J. Favinger, State Entomologist, announces the appointment of G. Earl Huff as Assistant State Apiarist in addition to his other duties with the Division as a nursery inspector and pest control officer.

Mr. Huff received his Bachelor of Science in Agriculture degree from Purdue University in 1948 and his Master of Science degree from the University of Illinois in 1950. Major study for both degrees was in Entomology. He has been employed by the State Entomologist's Office since 1952 and prior to that time was service manager for the Arab Pest Control Company.

Earl is an Army veteran with overseas service in Iran and Italy. He has a farm background and has practical experience as well as technical training in apiculture. He is married, the father of two children, and lives at 3824 Ridgeview Drive in Indianapolis.

During the early part of this season before the regular bee inspectors have gone on the job, Mr. Huff has been assisting our Chief Inspector, Mr. Perigo, in the inspection of some apiaries listed for early sale or scheduled for out of state shipment. Any time you are in the office, Mr. Huff would enjoy having you stop by his desk to get acquainted.

COLORADO
Beekeepers' Annual Picnic
Salida, Colorado
June 29, 1959

Colorado Beekeepers' Annual Picnic will be held at Salida, Colorado, June 29, with lunch at noon. There will be a short business meeting followed by games and contests. We extend an invitation to any and all out of state beekeepers.—G. H. Rose, President, Colorado Beekeepers' Association.

MIDWESTERN
Beekeepers' Association
Lee Summit, Missouri
June 14, 1959

The Midwestern Beekeepers' Association will hold its regular monthly meeting at the Apple House, Unity Farm, Lee Summit, Missouri, at 2:30 p.m., Sunday, June 14, 1959. The meeting will feature a short talk, movies and refreshments. Everyone is welcome. —Carroll L. Barrett, Secretary.

CONNECTICUT
Beekeepers' Association
Watertown, Conn.
June 20, 1959

The Connecticut Beekeepers' Association summer meeting will be held June 20, 1959, starting at 10 A.M. at the home of Mr. and Mrs. Raymond Gillette, Linkfield Road, off Rt. 63, Watertown, Conn. The honored speaker will be Mr. R. H. Anderson, Stellenbosch, South Africa, now at Cornell, who will talk on the native African bees and beekeeping in South Africa. Folks who attend should bring a picnic lunch or a covered dish for the picnic style lunch. Coffee and soda will be furnished. An invitation is extended to all beekeepers. Come and have a good time.—Philemon J. Hewitt, Jr., Publicity Chairman.

MASSACHUSETTS
Middlesex Co. Beekeepers' Association
Groton, Massachusetts
June 27, 1959

The second outdoor meeting of the 1959 summer season of the Middlesex County Beekeepers' Association will be held at the home and apiaries of Mr. and Mrs. S. W. Dickson, Old Ayer Road, Groton, Massachusetts on Saturday June 27 at 2 P.M. The Club Hive which has made good progress will be opened and exhibited. Our genial host, Mr. Dixon specializes in the production of comb honey and hopes to show how the bees make this delectable merchandise. A business meeting will be followed by a picnic supper.—M. Southwick, Corres. Secretary.

RHODE ISLAND
Apicultural Society
Providence, R. I.
June 14, 1959

Apicultural Society of Rhode Island will meet Sunday June 14 at the home of W. K. Davis, 81 Bergen Street, Providence. In case of rainy weather the meeting will be held June 21 at 2 P.M. —John P. Card, Sec.

ILLINOIS
Cook DuPage Beekeepers' Association
Lemont, Illinois
July 12, 1959

The Cook DuPage Beekeepers' Association will sponsor the summer meeting of the Illinois State Association, to be held Sunday, July 12, 1959, at St. Mary's on the Hill, Lemont, Ill. This seminary is on old Archer Avenue, about one mile east of Lemont, Ill. Meeting will start at 10 A.M., rain or shine as we have shelter for 1,000 beekeepers. Pot luck dinner will be served at 12:30 P.M. Coffee and ham will be served. The program is being arranged with some out of state speakers. All beekeepers and their friends are welcome.—A. J. Smith.

"Atarashii Mitsubachi no Kiakata", a new bee book by Tanji Inone, Bee Culture Laboratory, Nagoya, Japan, is just off the press. The title of the book means "How to Keep Honeybees by the Modern Beekeeping System". Mr. Inone is the author of a number of books and has written some articles for Gleanings. His latest book will be useful for Japanese professional beekeepers as well as beginners.

A 1,145-PAGE ENCYCLOPEDIA OF ORGANIC GARDENING

Recently the staff of Organic Gardening and Farming magazine has placed on the market a 1,145 page book entitled the "Encyclopedia of Organic Gardening". The Encyclopedia covers the whole field of horticulture from the organic point of view. It helps identify plants, cure plant diseases and prevent insect attack; in short it goes a long way toward solving your garden problems.

The book covers many subjects and prominent among them is beekeeping. Six pages of the encyclopedia have been devoted to beekeeping, not to mention the many times it comes up under other subjects. In the classification entitled "Beekeeping" they tell how thousands of gardeners are turning to beekeeping as a rewarding hobby and for honey and pollination which the bees perform. They impress upon the reader how important bees are in getting good crop yields. The articles on beekeeping were written by Dr. Sterling Edwards and Robert Mead.

The Encyclopedia is beautifully illustrated and well worth its $7.00 price for anyone interested in gardening. It is printed by Rodale Books, Inc., Emmaus, Pennsylvania.

MINNESOTA — NORTH DAKOTA
Beekeepers' Meeting
Detroit Lakes
July 24 and 25

The Minnesota-North Dakota Beekeepers' annual summer meeting will be held at Detroit Lakes on Friday and Saturday July 24 and 25. The program is being planned by the Lake Region Beekeepers' Association. Features will be the honey baking contest and Friday noon picnic. Several outstanding speakers will address the group on subjects of timely interest to beekeepers. All interested beekeepers and members are cordially invited to attend. Make plans and reservations now for a really wonderful time in Detroit Lakes. —George McReynolds, Secretary, Minnesota Beekeepers' Association.

HISTORY OF BEEKEEPING IN BRITAIN
By Dr. Malcolm Fraser

The book entitled "History of Beekeeping in Britain", by Dr. Malcolm Fraser contains much useful information on beekeeping as carried on from the early days up until the present. Hundreds of interesting facts are recorded. The first original English book on beekeeping by Edmund Southerne appeared in 1593 and contained information on the right use and ordering of bees. Observation hives were found in the garden of the French Royal Observatory by Maraldi in 1687. Irish beekeeping literature began in 1733 and Scottish two years earlier. In 1750, Arthur Dobbs, author of "Philosophical Transactions" said bees gather pollen from one kind of flower only on each flight, also that pollen is a male seed that fertilizes the ovum. In 1773 Daniel Wildman wrote "A Complete Guide for Management of Bees" He had flat top hives with holes in tops over which he placed glasses for storage of honey. John Hunter in 1792 made observation hives and observed bees dancing, also saw wax scales and so we could go on and on. Dr. Fraser, author of other books including "Beekeeping in Antiquity" published in 1931 is eminently qualified to write this, his latest book which contains 100 pages and is published by the Bee Research Association, 678 Salisbury House, London Wall, London, E C 2 England. The price is 10/6d or $1.85 plus 15 cents postage.

A TALK TO BEGINNERS
(Continued from page 365)

necessary, three or four to begin with.

These nucs are usually made up at the beginning of the honey flow, especially when swarm cells are found. When we had bees in western Ohio some years ago, about 50 or 60 hives in each yard, we would plan to have 10 nucs in each yard. As we checked through the bees, if we came on to a colony that had queen cells and had not swarmed, we would remove at least two combs containing sealed brood, queen cells and some honey to put into the nuc box. Of course, we wanted the combs quite well covered with bees. We would put in an extra empty comb and also a comb fairly well filled with honey. We would then shake in young emerging bees that would stay put. Of course, all of the old bees would return to the hive from which they were taken.

THANKS

Sold out
of all
Bees and Queens
for 1959

Cloverline Apiaries
P.O. Box 5126 Columbia, S. C.

An Ad in GLEANINGS will get the job DONE

Many of our readers wish they knew how to buy from you. The most inexpensive way to let them know is to advertise in Gleanings. For over 85 years Gleanings has been taking the work out of selling.

Be sure your "selling story" is in the next issue. Send for an advertiser's rate card today.

Gleanings in Bee Culture
Medina, Ohio

In due time, barring very unusual conditions, we would find young laying queens in these nucs. Whenever we found a colony needing a young queen, we would kill the old queen, remove two combs that did not contain brood, in order to make space for two combs in the nuc containing the young queen. We aimed to have the young queen between the two combs of brood that were lifted into the queenless colony. These queens were accepted quite readily, in fact we rarely missed.

The two combs removed from the colony that received the queen were put into the nuc which had at least one comb with some young brood from which they could rear another queen.

At the end of the season these nucs which usually had young queens came in handy for requeening queenless colonies and boosting colonies that were slightly below par in strength.

Making Every Move Count

One has to do this in beekeeping. When manipulating hives of bees one should open the hive and handle the combs properly. Never leave combs of honey standing by the side of the hive when there is a dearth of nectar. Bees are likely to start robbing and when they do you might as well close up the hives for the day.

Sometimes it may be a little difficult to determine whether or not a colony is being robbed. Robber bees will attempt to get into the hives when the covers are removed and after a hive is manipulated and closed up, the robber bees will usually try to crowd in the hive entrance. They will also cluster around any small opening that may occur between the supers and the brood chambers. It is well to reduce the entrance on a hive that is being attacked by robber bees. This helps the colony to defend the hive entrance.

Checking Items Needed for an Outyard

This applies to commercial beekeepers who have outapiaries, also, to backlot or sideline beekeepers who have bees some distance from home.

It is disgusting to reach an outyard and find that you failed to take along a bee smoker, bee veil or some other item that is needed. I recall a few years

ago arriving at one of my yards in the country, to discover that I had failed to take my bee smoker. Not wishing to drive back after the smoker, I tried working the bees without a smoker. I did have my bee veil and bee gloves.

Be assured of greatest honey crop available by using line-bred young Caucasian or Carniolan laying queens. Bred for gentleness, honey-gathering and reproduction characteristics.

Air Mail	1-49	50-99	100 up
Queens	$1.45	$1.35	$1.25

$2.25 to Foreign Countries

Clipped or marked 10 cents extra.

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P. O. Box 58 Funston, Ga.

Some honey was coming in and I was somewhat surprised to find that I could manipulate hives quite well without a smoker. Naturally I opened the hives very carefully and removed the combs slowly. That experience made me wonder if a bee smoker is as important as most of us think it is. That may have been a day when the bees were quite gentle and did not object to having the hives opened. All of us who have kept bees for a time know that there is a difference in days. Some days bees are like angels, other days they are like devils. As a rule, however, when bees are carrying nectar rapidly they are not likely to sting, if handled carefully. That is the main reason we advise beekeepers, especially those in towns and cities where neighbors are nearby, to examine bees only on warm days when bees are carrying nectar and pollen. If hives are opened during cool weather when bees are not flying they may get stirred up and cause some trouble with the neighbors.

But to get back to items needed at outapiaries, some years ago we had around a thousand colonies of bees scattered in 20 apiaries some distance from Medina. It was really quite a job to keep tab on what was going on in all of the yards. I had a record book which I called the "Book of Knowledge" in which was tabulated pertinent information concerning each outyard, but I will not go into this matter at present.

Usually there would be three men leaving in the morning to visit outyards. It was, of course, necessary that all of the items for manipulating the bees be loaded on the truck. Sometimes they would reach an apiary to find that a smoker, hive tool, or bee veil, or queens for requeening had been left behind. Not until we formulated a system of carefully checking items needed, did we overcome this difficulty. One man had a list of items needed and as he called off the list another man would see that the items went on to the truck.

Beekeepers in the south may have already secured some surplus honey. Beekeepers in this latitude and farther north may secure some surplus this month. It behooves beekeepers to have an ample number of supers on the hives to hold the crop. Perhaps this is the season we have been waiting for.

Library

THE HAZARDS OF POLLINATION SERVICE

(Continued from page 347)

the plaintiff filed a counter suit for damages.

Regardless of the fact that a dozen or more factors may affect the amount of seed produced on any given field, or that the grower had never raised alfalfa seed before and the field had never been used for seed production, the case was settled out of court in favor of the plaintiff before the defendant could complete his case. The beekeeper was covered by a comprehensive insurance policy. I was told that the settlement was made for less than a third of the amount asked.

It is my opinion that the settlement was an injustice to both the seed industry and to the beekeeping industry. Although it will not constitute a legal precedent, having been settled out of court, it should make both the seed grower and, particularly the beekeeper, give very careful consideration to their contracts and to public relations. The beekeeper should stipulate in his contract that he does not guarantee his bees to produce any given amount of fruit or seed and that he will manage his colonies to the best of his ability considering the many factors that enter into their care. The grower, on the other hand, will want to have it understood, or at least assumed, that he is responsible for the cultivation, seeding, irrigation, control of weeds and insects, time and efficiency of harvesting and of the several other factors that help to make a seed crop. Many seed growers want the colonies well supered in anticipation of their needs so the beekeeper will not have to drive through his seed fields in order to "work" the bees.

It would be well for the beekeeper to explain to the grower the kind of management the colonies will need during the blooming period so that well cared for colonies will not be considered neglected. It might also be good public relations for the beekeeper to contact the grower a few times during the summer and to exchange experiences about the strength of the colonies and the condition of the plants. In all cases both parties should know how to get in touch with the other in order to talk over any "gripes" they might have or to discuss any factors that might be an improvement on the condition of the bees or of the crop. Good public relations are an invaluable asset to the seed and to the beekeeping industry.

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CLOVER HONEY in 60's, one can or carload. VANDERFORD-HINKLE APIARIES, 701 South Main, ELLENSBURG, WASH.

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BEEKEEPERS TAKE NOTICE—We cannot guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—All grades of extracted honey. Send sample and price. DEER CREEK HONEY FARMS, LONDON, OHIO.

CASH FOR BEESWAX. Write as to quantity and we will quote price. MUENCH-KREUZER CANDLE CO., INC., SYRACUSE, N. Y.

WANTED—White extracted or comb honey. Send sample. MILLERSPORT HONEY CO., MILLERSPORT, OHIO.

BEESWAX WANTED—Highest prices paid in cash or trade for bee supplies. THE A. I. ROOT COMPANY, MEDINA, OHIO; COUNCIL BLUFFS, IOWA; SAN ANTONIO, TEXAS.

WRITE FOR SHIPPING TAGS and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. WALTER T. KELLEY CO., CLARKSON, KY.

WANTED — Light amber clover, fall flowers, buckwheat and white clover. Send sample and lowest price. CLOVERDALE HONEY CO., FREDONIA, N. Y.

WANTED—Buckwheat and light amber honey. EASTERN FOOD PRODUCTS, 421 BEDFORD AVE., BROOKLYN, N. Y.

WANTED, chunk comb and extracted honey. Mail sample and price. STOLLER HONEY FARMS, LATTY, OHIO.

HONEY WANTED for bottling, bakers including buckwheat. All types, in tins or drums, trailer loads. Send samples representing each lot. ALSO ROYAL JELLY. Write CHAS. E. FARRIS CO., 99 HUDSON ST., N. Y. City. Established since 1910.

WANTED—Honey in 60 pound cans, also beeswax any quantity. L. E. ALLEN, TIPTON, MICH.

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WANTED EXTRA LIGHT Amber Honey—Cans or drums. HUBBARD APIARIES, ONSTED, MICHIGAN.

WANTED AMBER Honey—Cans or drums. HUBBARD APIARIES, ONSTED, MICHIGAN.

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WANTED: Honey—water-white, light amber and buckwheat extracted and comb. Send samples and prices. M. R. CARY CORP., 219 Washington Square, SYRACUSE 8, NEW YORK.

WANTED—1,000 to 2,000 60's, white bottling honey before the new crop. Please send sample and best price. Also once-used 60's, 25¢, others nice inside, 15¢, for sale. HONEYMOON PROD. CO., 39 E. Henry St., RIVER ROUGE 18,, MICH.

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WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. HUBBARD APIARIES, Manufacturers of Beekeepers' Supplies and Comb Foundation, ONSTED, MICHIGAN.

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FOR SALE—160 stands bees, 60 hives with wax, 20 hive frames, 1 honey extractor, 1 honey melter, 320 supers, 40 boxes for storage, 30 cream cans, 500 pounds old honey, 20 queen excluders, 2,000 sections, 18 honey cases, 300 honey labels, 5-lb. cans, 14 pounds wax foundation, 1,200 wrappers for comb honey. HARRY M. SULZBERGER, RANSOM, ILL.

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CARNIOLAN and CAUCASIAN Bees for 1959. Booking queens. Each, $1.00; 2-pound bees with queen, $4.00. 3-pound bees with queen, $5.00. LEWIS & TILLERY BEE CO., RT. 3, BOX 251, GREENVILLE, ALABAMA.

THREE-BAND Italian and Carniolan Bees with Queens, $4.60; 5 lb., $6.50; Queens, $1.00. LUTHER PICKETT, EFLAND, N. C.

WANTED

WANTED—A man to do editorial work on a beekeeping publication. From 25-45 years of age preferred. Practical beekeeping experience and at least two years of college education required. Please submit qualifications with application. Box 51, Gleanings in Bee Culture, Medina, Ohio.

WANTED — A Wax Master. IVAN WHITING, ROSCOE, ILLINOIS.

WANTED to borrow or buy 1500 deep supers with disease free combs to replace fire damage. Write immediately if you can spare this equipment. BYRON ALDRICH, MONETA, IOWA.

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ROYAL JELLY capsules (with added vitamins) 25 mg. box of 30, $2.15, 50 mg. box of 30, $3.50. New Pack (without vitamins) $7.50 per 100. Beauty Cream, 2 oz., $2.00. PRAIRIE VIEW HONEY CO., 12303 Twelfth Street, DETROIT 6, MICH.

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Archiv fur Bienkunde, International journal for Bee Culture and beekeeping economics. Founded in the fall of 1918. Oldest economic bee journal in the world. Praised again and again for its decades of independent leadership through many endorsements and advice as a valuable source also for the practice. Classic. Yearly DM 5.50. Any aspiring beekeeping friend will receive a sample copy. BIENE-VERGLAG, GIELBACK, LINDAU, GERMANY.

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	1-9	10-49	50-up
2-lb. pkg. with young laying queen	$4.35	$4.10	$4.00
3-lb. pkg. with young laying queen	5.35	5.10	5.00
4-lb. pkg. with young laying queen	6.45	6.10	6.00
Extra Queens	1.50	1.40	1.30

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Quality queens that
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Prices throughout season.

2 lb. pkg. with queen	$2.85
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FARRIS HOMAN
Shannon, Miss.

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J. E. WING & SONS
47 Years Continuous Service
Italian Package Bees
and Queens
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THE CASE OF UTTER VS UTTER

(Continued from page 337)

So ended one of the most interesting precedent-setting legal cases in the history of American beekeeping. Had anyone taken the time to examine a bee's tongue in the beginning it would have been discovered that the tip is a soft, pliable, spoon-shaped structure that is incapable of penetrating the skin of any type of fruit.

REFERENCES FOR FURTHER INFORMATION

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EASIER COMB HONEY PRODUCTION

(Continued from page 339)

flow they are placed directly on top of the two brood chambers. If there is any brood in the full depth super that was given to the colony at fruit bloom time it is placed on top of the comb honey supers until the brood has emerged. Care must be taken to see that the queen is not present in this super when it is removed. One may also give this super to a weak colony if he wishes to do so. If there is just a very small amount of brood or honey present in the super it may be given to any colony that is kept for extracted honey production. All supers that contain any amount of brood should be marked and checked for queen cells later. When the bees are working well in all sections of the second super then the third one is given to the colony and the rest accordingly as needed.

In using this method the beekeeper should remember that only strong colonies with young queens be used, that the bees always have ample honey and pollen and that he, the beekeeper, should have had considerable experience in beekeeping. Following these rules he should have good success in comb honey production as there are many benefits derived by using this method. The food chambers are usually well filled for the winter and there is no necessity for fall feeding or to give a colony surplus from another hive. It is about the simplest and most practical way to produce comb honey that I know.

YORK'S Quality Bred
ITALIANS STARLINES MIDNITES

Packages with Italian Queens

Quantity	1-24	25-99	100 up
2 lb. -----	$4.50	$4.25	$4.00
3 lb. -----	5.70	5.45	5.20
4 lb. -----	6.90	6.65	6.40
5 lb. -----	8.10	7.85	7.60
Extra Queens Italian	1.45	1.35	1.25

Packages with Starline or Midnite Queens

Quantity	1-24	25-99	100 up
2 lb. -----	$4.80	$4.55	$4.30
3 lb. -----	6.00	5.75	5.50
4 lb. -----	7.20	6.95	6.70
5 lb. -----	8.40	8.15	7.90
Extra Queens — Starline or Midnite	1.75	1.65	1.55

Queenless packages — deduct $1.00 per package.
Tested Queens — add $1.00 per package or queen.
Queens Clipped 10¢. Clip and Mark 15¢ each additional.
Terms: Small orders cash, large orders $1.00 deposit per package and balance two weeks prior to shipping date.

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Typical truckload of packages

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Queens ..... $1.50 each
June to November. No package bees.
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ITALIAN QUEENS

1 to 24	$1.45
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Until June 15
ROYAL JELLY
Bulk & Capsules Write for Prices
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2-lb. pkgs. $4.80 3-lb. pkgs. $6.00 4-lb. pkgs. $7.20 Queens $1.75 ea.
add 10¢ for marking and clipping.
CARNIOLANS & CAUCASIANS
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Our 100% satisfaction has been good for 47 years, let us prove it.

Packages with Queens (Italian only).

2-lb. pkgs. with queens	**$3.00 any number**
3-lb. pkg. with queens	**4.00 any number**
Tested queens	**1.50 any number**
Untested queens	**.75 ea. 50 up, 65¢**
For larger pkgs. add	**.80 per lb.**

Terms $1.00 per package with orders balance before shipments.

QUEENS – BOOSTER PACKAGES

Lots of extra good queens ready for prompt shipment. We can also supply you booster packages with or without queens. Don't let those weak colonies drag along — give them a pound or two of young bees and watch them go.

PRICES

In lots of	Queens	2 lb. & Q.	3 lb. & Q.	4 lb. & Q.	5 lb. & Q.
1 - 24	$1.00	$3.75	$4.50	$5.40	$6.35
25-499	.85	3.35	4.20	5.05	6.00

Tested queens . . . . . $2.00 each

THE STOVER APIARIES
Mayhew, Miss.

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A BUSY BEE CLUB

(Continued from page 343)

service. Recently the club has been able to secure the services of a package bee trucker, resulting in better service and further savings.

Beekeepers Like to Have Shipments Arrive Week Ends

Since all the club members have full time jobs, they like the package bees to arrive on a Friday in mid-April. They can then spend the weekend installing the bees in the hives. The weather in mid-April is variable, sometimes cold and wet, but often warm and bright. We take our chances and the bees usually take bad weather in stride, better than humans do.

New beeekeepers take an interest in the club since it provides an opportunity to meet and talk to more experienced beekeepers. The experienced beekeepers like to swap stories and talk bees. Oldtimers like F. W. Mahon and Bill Miller really enjoy talking about bees and bygone days. Mr. Mahon just loves his bees. You won't catch him killing them in the fall. The general meetings usually feature a beekeeping film and informative talks and discussions. Summer meetings usually take the form of a picnic supper and apiary demonstration combined.

Club members occasionally take an interest in special projects. · Members set up and man the honey exhibit at the Regina Exhibition each August. The club has also provided an evening social for visiting beekeepers who were attending the Saskatchewan Beekeepers' Association annual meeting.

The annual meeting of the bee club was held February 11, 1959. Beekeepers always have a feeling of anticipation at this time of year. This feeling was evident at our meeting as we considered the placing of orders for package bees and the exhibiting of honey at the exhibition next year. The election of officers produced the following executive members: Past President, G. Bitney; President, G. McCartney; Vice President, J. Butterfield; Secretary-Treasurer, G. McAdoo; Committee Members, H. Hettle and R. Howland.

I hope you enjoyed reading about our bee club. As you can see, beekeepers are the same no matter where they live, always enthusiastic and full of anticipation.

QUEENS! of QUALITY

75¢ Each
By Return Mail

Bright 3-band Italian Bees and Queens of highest quality. Purely mated, safe arrival and satisfaction guaranteed. Packages shipped F.O.B. Express or Via Parcel Post postage collect. State health certificate furnished with each shipment. Mail your orders TODAY and be among our MANY SATISFIED customers.

Untested Queens	**$ .75**
Tested Queens	**1.50**
2-lb. pkg. with queen	**3.00**
3-lb. pkg. with queen	**4.00**

JOHN A. NORMAN
Grady, Alabama **Route 1**

CAUCASIAN QUEENS		MIDNITE QUEENS
1-24	$1.10	$1.35
25-99	1.00	1.25
100 & up	.90	1.10

Howard Weaver & Sons
Navasota, Texas

BRITISH BEE JOURNAL
The Only FORTNIGHTLY Bee Journal in the World

Subscription price £1.1.0 per annum, post free, six months 11/6d. post free and three months 6/3d. post free.

Keep up to Date in Beekeeping by taking out a subscription now through our agents:

Gleanings in Bee Culture
Medina, Ohio

QUEENS
from
NORTHERN CALIFORNIA

	Italians	Starlines
1-25	$1.10	$1.40
over 25	1.00	1.30

Available from spring to early fall.

GEO. E. SMITH & SON
PHONES:
Sherwood 2-3511 — Sherwood 2-5544
Rt. 4, Box 59 Yuba City, Calif.

QUEENS are now available

The package rush is about over and we can accept orders for queens.

Prices:	Regular to May 20	Regular after May 20
1-24	$1.50	$1.20 each
25-99 ...	1.40	1.10
100 up ..	1.30	1.00

Island Hybrid	to May 20	after May 20
1-24	$1.80 ea.	$1.50 each
25-99 ...	1.70	1.40
100 up ..	1.60	1.30

Refer to earlier ads for package prices. After May 10th deduct 75¢ per package.

Rossman Apiaries
P.O. Box 133, Moultrie, Ga.

QUALITY BRED ITALIAN QUEENS

All breeder queens selected from our Northern Apiaries for Hardiness and Honey production. All queens shipped Air Mail. No queens shipped out of Continental USA and Canada.

May queens	**$1.25 each**
June through Sept.	**.75 each**
Oct. and Nov.	**1.00 each**

Walter D. Levorette Apiaries
P. O. BOX 364 FORT PIERCE, FLA.

RESEARCH REVIEW

(Continued from page 350)

an attempt to help protect farmers against suits, mentions several court cases without being very specific. Whereas the cases cited probably exist, the sum total of throwing them together in an article without any explanation equals considerable confusion. Since the main circulation of the magazine is to county agricultural agents we may very well hear more about the matter.

In one case a beekeeper could not collect for loss because he had been warned loss might occur and the court ruled he should have confined his bees and protected them. At two other points in the article examples of beekeepers having collected for loss are cited. And at still another point a court ruled that owners of land "owe no duty to protect trespassing bees from danger of poison".

Another part of the article is yet to appear and we can only hope that more confusion will not result. At this point a bibliography of legal cases pertaining to honeybees and loss from insecticide might be very helpful.

These case histories can help farmers avoid spraying and dusting liabilities. County Agent and Vo-Ag Teacher 15:24-5. 1959.

FROM FOREIGN LANDS

(Continued from page 351)

own. Disregarding the poisonous pollens, many pollens can become, even if freshly gathered, poisonous by fermentation.

La Belgique Apicole, May 1958.

Weather Influences Nectar Yield:

WARMTH AND HUMIDITY play the most important role in the nectar secretion of plants. Experience of many years shows that a good nectar yield can be expected:

1. after a warm night.
2. after an early morning rain.
3. after sporadic showers alternated with sunshine.
4. after light cloudiness following strong sunshine.
5. after a sultry day developing into a thunderstorm.
6. after a thunderstorm.

Dr. Tomsik, Westfaelische Bienenzeitung.

ITALIAN.....“GULF BREEZE”.....QUEENS

Our 49 years of experience is your assurance for QUALITY stock. They produce heavy crops for us and our customeres. Clipping and painting 5¢ each extra.

Prices: 1-9....90¢ ea. 10-49....80¢ ea. 50 up....75¢ ea.

BESSONET BEE COMPANY Donaldsonville, La.

BETTER BRED QUEENS THREE BANDED ITALIANS

28 years selective breeding coupled with one of the best locations and the KNOW HOW, are responsible for one of the best strains of bees on the market.

Queens, any quantity .....$ .70 each
Limited supply of one-year-old tested queens ..... 1.00 each

CALVERT APIARIES Calvert, Ala.

FLOWERS' QUALITY ITALIANS
THAT WILL STAND THE TEST FOR HONEY GATHERERS:

2-lb package with young laying queen	$3.25
3-lb. package with young laying queen	4.25
QUEENS (untested)	.75
TESTED QUEENS	1.50

All queens bred from colonies making 300 pounds or over of honey. Shipped by express or parcel post, or come after your bees.

FLOWERS BEE COMPANY JESUP, GEORGIA, U.S.A.
Phone: June 4-2830 or 4-2837

JENSEN SAYS:
Our Queens "Have Got It". We mean everything good queens should have. Backed by Superior Breeding stock. Proper production methods that assure the highest percentage of perfectly developed young queens. The recollection of Quality will remain long after price is forgotten. So much depends on the Queen; why risk your time, labor, and even your crop?

Dadant Starline Hybrids		Magnolia State Italians	
1-24	$1.40	1-24	$1.10
25-99	1.25	25-99	1.05
100-up	1.10	100-up	1.00

Reg. U. S. Pat. Off.

Clipped & Marked Free. Air Mail where expedient.
JENSEN'S APIARIES Phone 170J MACON, MISS.

California Caucasians

Gentle and industrious Caucasian queens. Hastings strain used for breeders. Bred for greater honey production. Gentleness, highly prolific. No excessive propolis. Swarm control and color. Some package bees. 10% books your order — balance two weeks prior to shipment. Air Mail. We do not clip or mark.

Summer and Fall Queens

1 to 24 ..... $1.30 25 to 99 ..... $1.15 100 & up $1.00

QUALITY AND SERVICE DOESN'T COST — IT PAYS

DON J. STRACHAN Yuba City, Calif.

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"Old Reliable" **B E R R Y ' S** Italian Bees

Requeen those needy colonies. Make producers of them all.

THE PREFERRED STOCK OF LEADING HONEY PRODUCERS
Oldest Package Shipper South

America's Best Package Bees and Finest Queens. INSURE your honey crop with DEPENDABLE BERRY Bees (90% of our package bees are under 10 days old).
After 64 years of Select Breeding, we have settled on our strain of Italian bees as being unsurpassed by ANY stock, Hybrid or otherwise, in their relation to honey production, disease, and nosema resistance. We have bred repeatedly from MAJOR advertised strains, and abandoned them all as unequal to our "OLD RELIABLE" stock. "OLD RELIABLE" bees assure you that you have bought the best to be found, regardless of price. They are the Standard of the Beekeeping Profession, in leading honey producing areas. We maintain several branches in the Northwestern States that enable us to test our strain from both honey production and climatic standpoints. All this, along with Competent Breeding, assures you that when a better stock is produced, "OLD RELIABLE" will be the name.

PRICES AFTER JUNE 1st

Quantity	Queens	2-lb. w/q	3-lb. w/q	4-lb. w/q	5-lb. w/q
1-24	$ .95	$3.25	$4.00	$4.75	$5.50
25 up	.90	3.00	3.75	4.50	5.25

Tested queens $1.80 each. For queenless or "booster" packages deduct 90¢ from price of package.

Directions telling how to handle and a Certificate of Health accompany all shipments. May we book your order NOW? Deposit of $1.00 per package required for booking. Remainder remittance in full ten days before shipping date.

References: Union Bank & Trust Co., Montgomery, Ala. Any Bee Journal in the United States or Canada. Ask your Extension Agent about us.

M. C. BERRY & SONS
P. O. BOX 684 MONTGOMERY, ALABAMA

QUALITY LEATHER ITALIANS
SINCE 1930

Until June 1st Queens 1 to 25 . . . . . $1.00
26 & Up . . . . . .90 ea.
After June 1st Queens 1 to 25 85
26 & Up . . . . . .65 ea.

* AIR MAIL *
Satisfaction Guaranteed

We are prepared to ship your unexpected requirements.
Phone No. MUarray 4-2759

O. K. ANDERSON & SON
Post Office Box 193 Coffee Springs, Ala.

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FOR BUSY TIMES

(Continued from page 357)

Pour batter into two greased 8-inch pans. Sprinkle one layer with rice cereal which has been crushed and mixed with melted butter. Bake in moderate oven, 350°F., about 30 minutes. When cool, spread Honey Almond Cream Filling between layers, placing layer with topping on top.

Honey Almond Cream Filling

Three tablespoons honey, 3 tablespoons flour, ½ teaspoon salt, 1 egg yolk, slightly beaten, 1 cup milk, 1 teaspoon vanilla and ¼ teaspoon almond extract.

Blend honey, flour, and salt. Combine egg and milk; add to first mixture and mix well. Cook over hot water, stirring constantly until thick and smooth, about 4 minutes. Cool; add flavorings.

Jellied Honey Dessert

One 3-ounce package lemon flavored gelatin, ¾ cup boiling water, ¼ cup honey, ¼ teaspoon salt, 2 tablespoons lemon juice, 1 cup whipping cream.

Dissolve gelatin in boiling water. Add honey, salt, and lemon juice. Mix well. Chill until mixture begins to set. Whip cream until stiff; fold into gelatin mixture. Pour into 10 x 6-inch pan.

One and ½ cups oven toasted rice cereal, 1 tablespoon butter, and ¼ cup chopped nutmeats.

Crush cereal into fine crumbs; mix with melted butter and nutmeats. Sprinkle over pudding. Chill until firm. Cut into squares to serve. Yield: 6 servings.

Maraschino Cherry Honey Muffins

One cup whole bran cereal, ⅓ cup buttermilk or sour milk, ½ cup honey, 1 egg, ¼ cup soft shortening, 1 cup sifted flour, 1 teaspoon baking powder, ¼ teaspoon soda, ½ teaspoon salt, 6 maraschino cherries, cut in half and drained, and ¼ cup honey.

Combine bran, buttermilk, and honey; let stand about 10 minutes. Add egg and shortening; beat well. Sift together flour, baking powder, soda, and salt. Add to first mixture, stirring only until combined. In each of 12 greased muffin cups, place one cherry half and 1 teaspoon honey. Fill each cup ½ full of batter. Bake in moderately hot oven, 400°F. about 20 minutes. Serve piping hot with plenty of butter and honey.

Italian Queens

1 to 9 .....$1.50 ea.
10-24 ..... 1.25 "
Over 25 .... 1.00 "

Postpaid — Airmail
Live Delivery Guaranteed

John S. Shackelford
Rio Oso, Calif.
Phone: Wheatland,
NEptune 3-2392

QUEENS
75¢
—By Return Mail—

Are your colonies weak and run down? Requeen and put new life into them with NORMAN BROS.' young vigorous dependable queens. Safe arrival, health certificate, and satisfaction.

— PRICES —

2-lb. pkg. with queen $3.00
3-lb. pkg. with queen 4.00
Tested queens 1.50
All queens postpaid. Packages F.O.B.

NORMAN BROS. APIARIES
Ramer, Ala.

DADANT'S STARLINE
OUR REGULAR STOCK
Good honey getters and very gentle.
A pleasure to own.

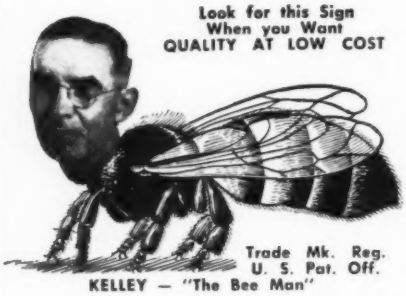
	1-25	25-100	100 up
2-lb. w/q	$4.50	$4.25	$4.00
3-lb. w/q	5.70	5.45	5.20

For larger packages add $1.10 per pound.
If shipped by P.P. add $1.50 per package.

Untested qns.	$1.45	$1.35	$1.25
Tested qns.	2.50 each		

The prices above are for our regular stock. For Dadant's Starline add 30¢ per package or queen.
Add 10¢ for clipping and painting queens.

ALAMANCE BEE COMPANY
GEO. E. CURTIS & SONS
La Belle, Fla. Box 525



KELLEY — "The Bee Man"

KELLEY'S

3-Banded Italian Queens

KELLEY'S QUEENS by the thousand are available now. If you are in a rush count on us for quick shipment by return air mail.

1 to 4	$1.00	by prepaid air mail
5 to 25	.90	" " " "
25 to 99	.85	" " " "
100 & up	.80	" " " "

THE WALTER T. KELLEY CO.

Clarkson, Ky.

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